

ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
 WATER QUALITY STANDARDS AND)
 EFFLUENT LIMITATIONS FOR THE)
 CHICAGO AREA WATERWAY SYSTEM)
 AND THE LOWER DES PLAINES)
 RIVER: PROPOSED AMENDMENTS)
 TO 35 Ill. Adm. Code Parts)
 301, 302, 303 and 304)

R08-09
 (Rulemaking-
 Water)

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STATE OF ILLINOIS
Pollution Control Board

REPORT OF PROCEEDINGS held in the
 above-entitled cause before Hearing Officer Marie
 Tipsord, called by the Illinois Pollution Control
 Board, taken before Laura Mukahirn, CSR, a notary
 public within and for the County of Cook and State
 of Illinois, at the Thompson Center, Chicago,
 Illinois, on the 13th day of January, 2010,
 commencing at the hour of 9:00 a.m.

A P P E A R A N C E S

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MS. MARIE TIPSORD, Hearing Officer
MR. TANNER GIRARD, Chairman
MR. ANAND RAO, Member
MS. CARRIE ZALEWSKI, Member
MR. THOMAS JOHNSON, Member
MR. GARY BLANKENSHIP, Member
 Appearing on behalf of the Illinois
 Pollution Control Board;

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BY: MS. SUSAN FRANZETTI
 Appearing on behalf of Midwest Generation.

1 HEARING OFFICER TIPSORD: Good morning
2 everyone. My name is Marie Tipsord, and I've
3 been appointed by the Board to serve as
4 hearing officer in this proceeding entitled
5 water quality standards and effluent
6 limitation for the Chicago Area Waterway
7 System and Lower Des Plaines River, proposed
8 amendments to 35 Ill. Admin. Code 301, 302,
9 303, and 304. This is Docket No. R08-9.
10 With me today to my immediate right is acting
11 chairman G. Tanner Girard, presiding board
12 member. To his immediate right is board
13 member Carrie Zalewski. To my far left is
14 board member Tom Johnson. Next to Tom is
15 board member Gary Blankenship, and we have
16 Anand Rao from our technical staff today.
17 Board member Andrea Moore will be joining us
18 in a short time.

19 This is Day 36. We are
20 continuing to hear testimony from members of
21 the public, and today we're going to hear the
22 testimony from Midwest Generation's final
23 witness in this area, Dr. Allen Burton.
24 Before I go too much further, I do want to

1 acknowledge the hard work. We have done 36
2 days today of hearing. I was telling Board
3 Member Zalawski yesterday that there have
4 been other rulemakings that have gone on
5 longer with more hearings, but those tended
6 to last ten years with several proposals.
7 This is the same proposal and we're all still
8 working on it, and I want to thank all of
9 you. I want to get that on the record again.
10 I can't thank you all enough for your
11 professionalism and the information you're
12 providing us. But going on, the testimony
13 will today will be marked as an exhibit
14 entered as if read, and after marking the
15 prefiled testimony, we will go to the
16 questions of the testifier starting with the
17 IEPA and then the Environmental Law and
18 Policy Center. As always, anyone may ask
19 follow-up questions. You need not wait until
20 your turn to ask questions. I do ask that
21 you raise your hand, wait for me to
22 acknowledge you. After I've acknowledged
23 you, please state your name, whom you
24 represent before you begin your question.

1 Please speak one at a time. If you're
2 speaking over each other, the court reporter
3 will not be able to get your questions on the
4 record. Please note that any questions asked
5 by a board member or staff are intended to
6 help build a complete record for the Board's
7 decision and not to express any preconceived
8 notion or bias. I had indicated at the last
9 hearing that today we would begin to look at
10 hearing dates to begin testimony from persons
11 other than the Agency on the actual proposed
12 water quality standards in this rulemaking.
13 However, the Board does have a pending motion
14 asking for more hearings, and that motion
15 will not be ripe for board decision until the
16 Board's February 4 meeting. If any of you
17 would like to respond to that motion, please
18 do so in writing with the Board. After the
19 Board has ruled on the motion, I will prepare
20 a hearing officer order setting a prehearing
21 conference call to discuss hearing dates as
22 well as the hearing topics. I would like all
23 of you to check your calendars and let me
24 know when you will be available for that

1 conference call. It will be done like we've
2 done in the past where we'll have a phone
3 number or you can come to the Board's office
4 and attend, whichever you prefer.

5 Thank you very much. Dr. Girard?

6 CHAIRMAN GIRARD: Thank you. Good
7 morning. On behalf of the Board, I'd like to
8 wish everyone a happy new year. We're
9 pleased this morning to see that everyone is
10 still in a holiday mood as we enter Hearing
11 Day 36 and hearing year three in this
12 rulemaking. We look forward to your
13 testimony and questions today. Thank you.

14 HEARING OFFICER TIPSORD: With that,
15 is there anything else before we begin with
16 the testimony? With that, if we could have
17 Dr. Burton sworn in.

18 (Witness sworn.)

19 HEARING OFFICER TIPSORD: And we will
20 enter Dr. Burton's prefiled testimony as
21 Exhibit No. 369, if there's no objection.

22 Seeing none, it will be
23 admitted as Exhibit No. 369.

24 MS. FRANZETTI: Madam Hearing Officer,

1 would it be easier to -- he has two
2 significant attachments to that testimony:
3 One is a report entitled review of the
4 Illinois EPA Water Quality Standards and
5 Effluent Limitations, and another one was the
6 Sediment Chemistry Study Report prepared by
7 EA. Would it be easier for purposes of
8 reference if we give the two attachments
9 separate exhibit numbers, or do you prefer to
10 keep it all under 369?

11 HEARING OFFICER TIPSORD: Let's keep
12 it all under 369. That's what we've been
13 doing, unless we have to start talking about
14 the exhibit to a large extent at the hearing.

15 MS. FRANZETTI: Okay. One other order
16 of business that I would like to introduce
17 into evidence, both two CDs and an index of
18 what is contained on each of the CDs. So I
19 think what would be useful is to give the CDs
20 an exhibit number and the index the next
21 exhibit number.

22 HEARING OFFICER TIPSORD: All right.

23 MS. FRANZETTI: So that would be --
24 the CDs are Exhibit 370, and the index is

1 Exhibit 371.

2 HEARING OFFICER TIPSORD: If there is
3 no objection --

4 MS. WILLIAMS: If -- I don't know what
5 the documents are. It's hard to allow them
6 in on a CD when we can't look at them. Are
7 they documents we've already seen or --

8 MS. FRANZETTI: They are to a great
9 extent -- Well, actually, totally all of them
10 are documents responding to your questions,
11 and many of your questions you asked for what
12 are the studies you're relying on, do you
13 have any studies. And so that's what all
14 this is.

15 MS. WILLIAMS: Give me a second to
16 look this over, please. Susan, do you have a
17 single hard copy of what's on the disc? I
18 think it would be easier if we wanted to
19 review things to cross-examine him on to be
20 able to look at the hard copy.

21 MS. FRANZETTI: If you need, that
22 represents a hard copy of the bulk of what's
23 on there. For certain of them where I
24 thought he would be talking about them in

1 more detail rather than simply telling you
2 that I relied on this study and it's No. 3 on
3 the CD, I've also brought hard copies of the
4 ones he'll discuss in more detail. But I
5 thought what we would do is as we get to
6 those, give them separate exhibit numbers.
7 But you're welcome to -- I can give you a set
8 of everything I've brought multiple hard
9 copies of that's on the disc.

10 HEARING OFFICER TIPSORD: And if it
11 would help if you don't -- if you did not
12 bring a laptop, the Board --

13 MS. WILLIAMS: We don't have the
14 ability to make copies or view anything here.

15 HEARING OFFICER TIPSORD: Go off the
16 record just a second.

17 (Off the record.)

18 HEARING OFFICER TIPSORD: We'll get
19 you a laptop so that you can look at the CD
20 as well.

21 MS. WILLIAMS: That would be great.
22 Thank you very much.

23 MS. FRANZETTI: Why don't we do this?
24 We've marked the index and the CDs as

1 Exhibits 370 and 371. Why don't we hold off
2 with their actual admission until we actually
3 go through the testimony. I don't have a
4 problem with that.

5 MS. WILLIAMS: And I don't have any
6 reason to think we would object to their
7 admission, it's just the ability to ask him
8 about the contents.

9 HEARING OFFICER TIPSORD: All right.
10 Well, why don't we go ahead and admit them,
11 and we'll get you a laptop. And if you need
12 time to explore something that Susan doesn't
13 have this hard copy, and that goes for
14 everyone, we'll set the laptop up and anybody
15 can look at what's on the CD if they need to.

16 We'll go ahead and admit them. As
17 we go through, if there's objections to
18 specific portions, we can deal with that as
19 it comes up. All right.

20 MS. FRANZETTI: I would note for the
21 record this is really no different of a
22 procedure than we followed for every witness
23 where a question elicits a request for
24 certain written information that's brought

1 with at the hearing to provide with the
2 answer.

3 HEARING OFFICER TIPSORD: I agree with
4 that. That's correct. The two CDs then are
5 marked as Exhibit 370, and the title on the
6 CD is Aquatic Ecological Study of the Upper
7 Illinois Waterway and the index of Exhibit
8 for G. Allen Burton's testimony is
9 Exhibit 371.

10 MS. FRANZETTI: Marie, can we also
11 swear in Mr. Goodfellow because he may be
12 speaking.

13 HEARING OFFICER TIPSORD: Sure. Why
14 don't you introduce him for the record.

15 MS. FRANZETTI: Yes. This is
16 Mr. William Goodfellow of EA Engineering.

17 (Witness sworn.)

18 HEARING OFFICER TIPSORD: Okay. With
19 that, I think we're ready for the action to
20 begin.

21 Examination

22 By Ms. Williams

23 Q. Good morning, Dr. Burton and
24 Mr. Goodfellow. My name is Deborah Williams. I'm

1 assistant counsel with Illinois Environmental
2 Protection Agency, and I will be asking the
3 questions today and maybe tomorrow of both of you.
4 I'm going to start with Question 1 of our prefiled
5 questions which is on Page 40, and it's is basically
6 just a clarification question: Please explain how
7 are you defining the term upper Illinois Waterway
8 and Upper Illinois Waterway System in the context of
9 your testimony?

10 A. The term Upper Illinois Waterway
11 generally refers to the waters from Lake Michigan
12 through the Chicago area downstream through the Ship
13 Canal and Lower Des Plaines and on to the connection
14 with the Mississippi River. In my testimony report
15 when I refer it to the UIW, the context often
16 further specifies the meaning of the term. For
17 example, on Page 2 of my report I refer to the upper
18 approximate 55 miles of the UIW. That was the
19 subject of my 1990 studies. So the scope of those
20 studies defines the geographic area. Similarly on
21 Page 4 of my report I refer to the fact that the
22 upper part of the UIW is known as the Chicago Area
23 Waterway System, and it consists of approximately 78
24 miles of manmade canals and modified river channels.

1 HEARING OFFICER TIPSORD: Dr. Burton,
2 remember you're speaking all the way out
3 there without a microphone. Please keep your
4 voice up. And we also have added noise
5 behind us with the trains, so.

6 BY MS. WILLIAMS:

7 Q. Can you explain for us geographically
8 the difference between 78 miles of the Chicago
9 waterway system and the upper 55 miles?

10 A. I believe the CAWS goes up above where
11 we say. We went up to approximately the turn basin,
12 and I believe --

13 Q. The North Avenue turning basin? Is
14 that what you're referring to?

15 A. I believe so.

16 Q. On the north branch or no? A
17 different --

18 A. No. We did not go up. It's in the
19 report, but I know for a fact that the Chicago Area
20 Waterway System goes further north than we did in
21 our study.

22 HEARING OFFICER TIPSORD: And the
23 southernmost of your study is?

24 THE WITNESS: Dresden Lock & Dam.

1 BY MS. WILLIAMS:

2 Q. When were you retained by Midwest
3 Generation to provide technical support concerning
4 the Illinois EPA's proposal?

5 A. Shortly after the October 2007 IEPA
6 proposal was filed with the board.

7 Q. And what other projects have you done
8 on behalf of Midwest Generation?

9 A. The only other project I did for
10 Midwest is consulting on this UAA project beginning
11 with the review of the Hey & Associates draft UAA
12 report for the Lower Des Plaines River. And I
13 previously conducted studies for the Upper Illinois
14 Waterway Task Force in the early/mid 1990s, but that
15 was before Midwest General.

16 Q. Were you working for Commonwealth
17 Edison at that time?

18 A. Yes.

19 Q. What other use attainability analyses
20 have you been involved with or performed in the
21 Midwest?

22 A. I reviewed some reports relating to
23 UAAs for the U.S. EPA many years ago. I have not
24 been involved in any other UAA rulemaking like this.

1 I've done extensive work for many years in
2 evaluating and studying the issues that are relevant
3 to the UAA such as this one including contaminated
4 sediments and their effect on waterways as well as
5 the other effects of urbanization on waterways that
6 I'm testifying about in this proceeding.

7 Q. Question 5: Who conducted the
8 extensive sampling in the Upper Illinois Waterway
9 from 1994 to 2008 referenced on Page 5 of your
10 testimony?

11 A. As part of the 1990's UIW task force
12 process, I was asked to evaluate the role of
13 sediment quality of UIW. In the mid 1990s I led
14 some evaluations of water and sediment quality on
15 the Des Plaines River for Com Ed which I published
16 under the titles the Upper Illinois Waterway Study
17 1994 to 1995, Sediment Contamination Assessment
18 Final Report in 1995, and the Upper Illinois
19 Waterway Ecological Survey Continuous In Situ
20 Toxicity Monitoring and Thermal Effect
21 Characterization Task in 1998. These studies
22 involved sampling evaluations of sediment
23 contamination and toxicity on the upper 55 miles of
24 the waterway, which I personally conducted. The

1 studies also involve reviews of the literature for
2 temperature, turbidity, and barge traffic effects,
3 in situ toxicity evaluations around the Joliet power
4 station, laboratory evaluations of temperature
5 effects. Studies were published in '95, co-authored
6 by me along with Hunt Brown under the title reviews
7 of the literature concerning effects of temperature
8 on fresh water fish, effects of fresh water biota
9 from interactions of temperature and chemicals, and
10 the effects of turbidity in barge traffic on aquatic
11 ecosystems. Some of these studies are cited in the
12 Lower Des Plaines UAA report that was filed for this
13 proceeding. It's labeled as Attachment A to the
14 initial filing.

15 MS. FRANZETTI: Can I ask you to stop
16 there? Two of the reports that he just
17 mentioned we did bring some extra copies of
18 in hard copy. So why don't I go ahead and
19 present those now. I would propose to mark
20 as a separate exhibit, it is on the CD, but
21 just for ease of reference, as Exhibit 372,
22 Dr. Burton's report that he's just
23 referenced, the Upper Illinois Waterway study
24 summary report, sediment contamination

1 assessment prepared for Commonwealth Edison
2 company by Dr. Burton dated December 18,
3 1995.

4 BY MS. WILLIAMS:

5 Q. Can you identify which number on the
6 index for sure here?

7 MS. FRANZETTI: I can in just a second
8 when I get back to the index.

9 HEARING OFFICER TIPSORD: That would
10 be document No. 6, I believe.

11 MS. FRANZETTI: Yes.

12 HEARING OFFICER TIPSORD: If there is
13 no objection, we will enter the Upper
14 Illinois Waterway Study Sediment
15 Contamination Assessment from December 18995
16 as Exhibit 372. Seeing no objection, it's
17 Exhibit 372.

18 MS. FRANZETTI: And then the next
19 document again also on the CD is -- I would
20 propose to mark as Exhibit 373 and introduce
21 into the record. This is the reviews of the
22 literature concerning effects of temperature
23 on fresh water fish, effects on fresh water
24 biota from interactions of temperature and

1 chemicals and effects of turbidity in barge
2 traffic on aquatic ecosystems. Also
3 co-authored by Dr. Burton and dated December
4 18, 1995.

5 HEARING OFFICER TIPSORD: And I
6 believe that's No. 21. If there is no
7 objection, we will admit the document you've
8 just described, review of the literature from
9 December 18, 1995, as Exhibit 373. Seeing
10 none, it's Exhibit 373.

11 DR. BURTON: Okay. Continuing on with
12 the studies I've reviewed, EA Engineering has
13 conducted annual fish surveys as far as the
14 UIW task force process during the entire 1994
15 to 2008 time period. EA also conducted a
16 habitat evaluation of the upper Des Plaines
17 in 2008. EA also conducted sediment sampling
18 in 2008, and I was involved in the
19 preparation of the sampling plan; that is,
20 the locations and testing to be performed.
21 EA's 2008 sediment data shows the
22 depositional sediments in the upper Des
23 Plaines and Brandon Lock & Dam areas are
24 still highly contaminated.

1 The next study was the
2 MWRDGC, the district, also conducted sediment
3 sampling over many years within this time
4 period; a report attached to the testimony
5 includes references to the 2007 and 2008
6 district reports on the results of their
7 sampling activities and the portions of UIW
8 during the period of 2001 and 2004 in the
9 Chicago area water system and 2000 to 2008
10 along the Illinois waterway from the Lockport
11 lock to the Peoria lock.

12 BY MS. WILLIAMS:

13 Q. And are these already exhibits
14 somewhere?

15 MS. FRANZETTI: I don't know that
16 those are already exhibits. I know that the
17 District provided a lot of testimony with
18 regard to their sediment sampling including,
19 for example, by Miss Wasik. So I think all
20 that information is effectively in the
21 record; if not the actual report, summaries
22 of what their collection and data analysis
23 showed.

24 BY MS. WILLIAMS:

1 Q. Are the reports that you're describing
2 that you reviewed, Dr. Burton, on your CD?

3 MS. FRANZETTI: No. We didn't put
4 any -- we didn't put the District reports on
5 the CD.

6 DR. BURTON: The next study was U.S.
7 EPA conducted sediment sampling on the UIW in
8 the early 2000s, is 2001 data suggests that
9 depositional sediments are still highly
10 contaminated and acutely toxic. These
11 sediments exceeded the respected sediment
12 quality guidelines that are known as probable
13 effect levels for a multitude of organic
14 chemicals which have been shown to be
15 accurate about 70 percent of the time in
16 predicting adverse effects to biota. The
17 U.S. EPA's 2001 sediment survey found highly
18 contaminated depositional sediments similar
19 to what we found in the mid '90s and
20 documented this watershed as one of the worst
21 in terms of toxicity potential. Also, the
22 Illinois State Natural History Survey
23 conducted studies on sediment contamination
24 and biological effects that Rick Sparks led

1 with published studies in '81, '94, and '92.
2 These studies showed widespread contamination
3 for multiple chemicals and implicated ammonia
4 as a primary toxicant to mussels and fish.

5 The USGS Groschen, et al. 2004 has
6 been submitted conducted a basin-wide survey
7 and found several nutrient and organic
8 sediments to be among the worst in the
9 nation. Levels were attributed to urban and
10 agricultural inputs.

11 BY MS. WILLIAMS:

12 Q. Is that study included in the record
13 somewhere?

14 MS. FRANZETTI: The Groschen study
15 that Dr. Burton just mentioned is No. 45 on
16 the index to the exhibits on CD 2 which we
17 have marked as Exhibit 371.

18 MS. WILLIAMS: Even though it says --

19 DR. BURTON: It's a USGS.

20 MS. WILLIAMS: 2004 even -- okay.

21 DR. BURTON: It's a USGS report, but
22 they ask that you cite it as Groschen, et al.

23 MS. WILLIAMS: Still can't get a
24 handle on those scientific citing methods.

1 They make no sense to me.

2 DR. BURTON: And, finally, Southern
3 Illinois University Mahler, et al., which has
4 been submitted, found extensive sediment
5 contamination and toxicity in sediments
6 upstream of the DuPage River into the Ship
7 Canal and Cal-Sag Channel. The primary
8 toxica was determined to be polycyclic
9 aromatic hydrocarbons, which I'll be
10 referring to as PAHs. Another statewide
11 survey that was just published out of that
12 same laboratory found pyrethroids, a
13 relatively new insecticide, were causing most
14 of the toxicity. And this occurred in most
15 urban sediments of the State of Illinois.

16 MS. FRANZETTI: The Mahler reference
17 study is No. 27 on the index to Exhibit 371.

18 MS. WILLIAMS: So are we still
19 answering Question 5.

20 DR. BURTON: We're finished now.

21 MS. FRANZETTI: Now we're finished.

22 DR. BURTON: Those were the studies I
23 reviewed.

24 BY MS. WILLIAMS:

1 Q. But the question was what was your
2 role in the Upper Illinois Waterway -- So you're
3 saying your role was to review these other studies?

4 MS. FRANZETTI: No. The question was
5 who conducted the extensive sampling in the
6 Upper Illinois Waterway from 1994 to 2008
7 referenced on Page 5 of your prefiled
8 testimony. So that's what he was answering.
9 You go on to ask were you involved in the
10 sampling? If yes, explain your role. And I
11 think he already basically covered that in
12 his answer so that we don't have go back over
13 that.

14 BY MS. WILLIAMS:

15 Q. Question 6: What studies authored by
16 you and others are you referring to on the top of
17 Page 5 of your prefiled testimony with respect to
18 urban and agricultural storm waters?

19 A. That's a multitude of studies which
20 are cited in my book that was done through the U.S.
21 EPA and CRC Press in 2001. It's entitled Storm
22 Water Effects Handbook: A Toolbox For Watershed
23 Manager, Scientists and Engineers, CRC Louis
24 Publishers, Boca Raton, Florida; and also my paper

1 on the role of whole effluent toxicity test methods
2 in assessing storm water and sediment contamination
3 published in CRC Critical Reviews and Environmental
4 Science and Technology, 2000. I provided these and
5 a number of other supporting references, some of
6 which I co-authored in the submission earlier.

7 MS. FRANZETTI: And if I can, just to
8 give you specific references on Exhibit 371,
9 the index of exhibits for CD 2 we included as
10 No. 2 the table of contents from Dr. Burton's
11 book that he was just referring to: Storm
12 Water Effects Handbook: A Toolbox For
13 Watershed Managers, Scientists, and
14 Engineers. No. 3 is Chapter 2 from that
15 book, No. 4 is Chapter 3 from that book,
16 Stressor Categories and Their Effects on
17 Humans and Ecosystems. And No. 5 is a list
18 of all the references for that book.

19 MS. WILLIAMS: Okay. Great.

20 MS. FRANZETTI: And the references
21 that he was just referring to in answer to
22 your Question 6.

23 BY MS. WILLIAMS:

24 Q. Thank you. Question 7 asks which

1 Illinois IAP 350(b) reports, 303(d) reports, and
2 integrated reports did you review to reach the
3 conclusion you state on Page 4 of your testimony
4 that, quote, the Upper Dresden Pool area, just like
5 many areas in the Des Plaines watershed has multiple
6 causes and sources of use impairment?

7 A. The reports were the Illinois Water
8 Quality Section 305(b) reports, 2002 and 2004; the
9 Illinois Integrated Water Quality Report in Section
10 303(d) list 2006; June 30, 2008, final draft
11 Illinois Integrated Water Quality Report, and
12 Section 303(d) list 2008. This final document was
13 not in final form prior to completion of my prefiled
14 testimony.

15 Q. On Page 3 of your testimony you state,
16 quote, as documented by the Illinois EPA in its
17 recent integrated water quality assessment report
18 submitted to the U.S. EPA, the Des Plaines River is
19 heavily polluted and ranks among the most impaired
20 water bodies in Illinois. And that question first
21 asks are you referring to the draft 2008 report in
22 this statement? And what specifically in that
23 report is the statement based on?

24 A. These statements are based on Appendix

1 B2 to the 2008 303(d) report; and the draft 2008
2 303(d) report there were 18 separate segments of the
3 Des Plaines River listed on the 303(d) list, which
4 have a very high number of segments for one river.

5 Q. So it was based on the number of
6 segments?

7 A. The number of segments, the number of
8 impairments and causes within those segments.

9 MS. FRANZETTI: And if I can, Counsel,
10 this is another document that's on the CD,
11 but I brought it in hard copy as well. I am
12 sorry, Marie. I've lost track of what
13 exhibit number we're on.

14 HEARING OFFICER TIPSORD: Exhibit 374.
15 I had hoped we'd get to 400 today.

16 MS. FRANZETTI: We might just fall
17 short. I'm running out of steam on the hard
18 copies. All right. I would like to move
19 into the record as Exhibit 374, this is
20 excerpts from the Illinois Integrated Water
21 Quality Report and Section 303(d) list 2008
22 dated August 2008. It's not clearly entitled
23 draft, but I think this is still a draft.
24 And the pages that are included in this are,

1 some of the -- are the pages that Dr. Burton
2 is referring to with respect to the impaired
3 sediments of the waterway.

4 HEARING OFFICER TIPSORD: If there's
5 no objection, we will enter selected pages of
6 the Illinois Integrated Water Quality Report
7 and Section 303(d), list 2008, as
8 Exhibit 374.

9 MS. WILLIAMS: Madam Hearing Officer,
10 I'd just like to say for the record this
11 document, Miss Franzetti is correct in
12 calling it draft in the sense that portions
13 of the report are not yet approved by U.S.
14 EPA. I mean we consider it a final document
15 that we've submitted.

16 MS. FRANZETTI: Okay. That is how
17 it's marked on the website. That's why I was
18 just being careful to note that and why we're
19 referring to it as draft. The electronic
20 copy of this is No. 47 on the index that has
21 been marked Exhibit 371.

22 HEARING OFFICER TIPSORD: Seeing no
23 objection, and with that note from the IEPA,
24 we will mark this as Exhibit 374.

1 BY MS. WILLIAMS:

2 Q. So, Dr. Burton, I'd like to go back a
3 second to your answer to Question 8. Did you say
4 that you found -- how many segments did you say you
5 found?

6 A. Eighteen. And this will be answered
7 more fully in the following question.

8 Q. And how many of those are secondary
9 contact and how many of those are general use?

10 A. I do not know.

11 Q. Do you know if the secondary contact
12 standards are -- secondary contact segments are
13 found to be impaired for that particular use
14 designation?

15 A. Yes. I answered that in my next
16 question, G11 and G23.

17 HEARING OFFICER TIPSORD: Are those
18 segment numbers, just to be clear?

19 DR. BURTON: Yes.

20 BY MS. WILLIAMS:

21 Q. Are you sure you don't mean G12?

22 A. I believe it's --

23 Q. Instead of G11?

24 A. I believe it's G11.

1 Q. When you refer to the 18 segments --
2 let's get to some more basic questions about your
3 understanding of the process. Are all of the
4 segments that Illinois assesses of the same length?
5 When we lay out, when we give water body segment
6 names and numbers, are they all the same size and
7 length?

8 A. I have no idea.

9 Q. Do you know -- When you're saying that
10 a segment is listed on the 303(d) list, are you
11 referring to it being listed for aquatic life use or
12 any use?

13 A. Anything.

14 Q. So that could mean recreational use?

15 A. Anything.

16 Q. It could mean a state-wide fish
17 consumption advisory?

18 A. Anything.

19 Q. Okay.

20 MS. FRANZETTI: Counsel, are you going
21 to move on to nine, or do you feel you've --

22 MS. WILLIAMS: I think I've -- We've
23 answered No. 9.

24 MS. FRANZETTI: Well, maybe not

1 totally. We wanted to give you the specific
2 documents on which Dr. Burton's statements
3 with respect to the fact that the 18 separate
4 segments of the Des Plaines River are listed
5 on the 303(d) list. So let me, if I may,
6 let's start with -- Let's do this one first.
7 Madam Hearing Officer, I'd like to introduce
8 as Exhibit 375, this is --

9 HEARING OFFICER TIPSORD: I've been
10 handed what looks like a printout of a
11 website.

12 MS. FRANZETTI: Yes. If you'd like I
13 can keep going to describe it.

14 HEARING OFFICER TIPSORD: Go ahead.

15 MS. FRANZETTI: Okay. It is a
16 printout from the U.S. EPA website, and it is
17 Section 303(d) list fact sheet for watershed
18 Des Plaines. And if you turn to Page 2 of
19 Exhibit 375, you'll see the Des Plaines River
20 listed eight rows down: Des Plaines River,
21 water body type, stream creek river. And
22 then it says waters on list, 18, and it's got
23 a red bar going across the page. So that is
24 the basis for Dr. Burton's testimony with

1 regard to the Des Plaines River having 18
2 segments listed on the 303(d) list. I'd like
3 to also introduce --

4 HEARING OFFICER TIPSORD: Let's finish
5 with this one. If there is no objection, we
6 will admit as Exhibit 375 these web pages
7 into the record. Seeing none, it's
8 Exhibit 375. Go ahead.

9 MS. FRANZETTI: The next document I'd
10 like to introduce as Exhibit 376, I'll
11 explain this just a moment what it is. When
12 you go to the U.S. EPA website and you look
13 at Exhibit 375; and, as I said, when you turn
14 to the second page, Des Plaines River, see
15 the 18 segments. If you click on that, what
16 you get is what -- in part, at least. We
17 didn't print out every single one. But what
18 you get are the documents that are contained
19 in Exhibit 376 for the various segments that
20 make up those 18 segments of the Des Plaines
21 River. We printed this out because along the
22 lines of Miss Williams' questioning, if
23 you're curious as to the impairments for
24 which each of these segments were listed,

1 those are set out here at least in summary
2 form by the U.S. EPA. So it makes it a
3 little easier to tell what each of these
4 segments were listed for. What is difficult,
5 you have to go back to Exhibit 374, the
6 303(d) list, and look at the segments of the
7 Des Plaines River, look over at the use
8 attainment column. And where you see an N in
9 front of the code number for the use, you
10 will -- That is the Agency's code for that
11 use is not supporting for that segment of the
12 river.

13 What we could not do in terms
14 of making this very clear with all the coding
15 and the numbering, is really lay out for you
16 visually where each of these segments are.
17 There's just not a narrative description
18 anywhere. There's not in the U.S. EPA
19 website, it's not on the Illinois EPA
20 website. As close as we could get is what
21 I'm also --

22 HEARING OFFICER TIPSORD: Let's finish
23 with Exhibit 376. If there is no objection
24 to Exhibit 376, these additional web pages,

1 it's U.S. EPA. And at the top it's total
2 maximum daily loads listed water information
3 cycle 2006 is admitted as Exhibit 376, seeing
4 no objection. Thank you.

5 CHAIRMAN GIRARD: May I ask a quick
6 question? Miss Franzetti, do those two
7 Exhibits 375 and 376 correspond exactly to
8 exhibits in the index that are on the disc?

9 MS. FRANZETTI: Yes.

10 CHAIRMAN GIRARD: Is 37 one of them?

11 MS. FRANZETTI: Yes. Thirty-seven is
12 Exhibit 375. Thirty-eight is Exhibit 376.
13 And I think that's it. And I don't know if I
14 had already said that Exhibit 374 is No. 47
15 on the index.

16 CHAIRMAN GIRARD: Yes. Thank you.

17 MS. FRANZETTI: There is a map of the
18 Des Plaines River watershed 303(d) listed
19 waters. It is on its face dated 2002. We
20 put it on the disc, No. 48. I thought I had
21 extra copies of it, but I don't. I can bring
22 those after the break -- after the lunch
23 break. That does -- It's from the IEPA's
24 website, and it does try and give you these

1 G10, et cetera, numbering segments for the
2 Des Plaines River. Even that is tough to
3 discern in terms of you just can't blow it up
4 and still maintain the clarity. Looking at
5 it on the disc is a little better because you
6 can zoom in. So that's what we've done in
7 terms of trying to document the basis for
8 Dr. Burton's testimony. And, Counsel, if you
9 wish, Dr. Burton is prepared to talk a little
10 more specifically about the particular
11 segments of the Des Plaines River that are
12 actually within the UAA waterway.

13 BY MS. WILLIAMS:

14 Q. And I don't want to spend a lot of
15 time -- it wasn't my intent to get into a lot of
16 detail on this. Because I certainly agree,
17 Dr. Burton, that these are complicated reports to
18 understand just in isolation. What I wanted to try
19 to ask you is whether you would agree that the
20 segments of the Des Plaines River that are part of
21 this study have not been assessed against Clean
22 Water Act aquatic life use goals; they've been
23 assessed against their current use designation of
24 secondary contact. Do you agree or disagree or you

1 don't know?

2 A. I believe that's true.

3 Q. And did you want to clear anything up
4 about which segments are the ones that are the ones
5 in the study area?

6 A. I guess it's very relevant. So G11
7 and 23, let's see, among the causes of impairments
8 for 11 and 23 are turbidity, nutrients, pesticides,
9 dissolved oxygen, chlorides, PCBs, metals, and
10 mercury.

11 Q. Can we talk about 23 first and then
12 we'll get to where 11 actually is located. What's
13 listed for 23 for aquatic life use?

14 A. All I have is what I just read.

15 Q. So you think all of those are included
16 within -- I mean I think we can turn to one of your
17 pages here that has G23 in Exhibit 376.

18 MS. FRANZETTI: Using 376.

19 MS. WILLIAMS: I believe it's towards
20 the back.

21 MS. FRANZETTI: The U.S. EPA doesn't
22 have them in number order, but that may be
23 because that's --

24 MS. WILLIAMS: The back of Page 4.

1 MS. FRANZETTI: That's not the way
2 they're numbered in real life. I think it
3 is.

4 MS. WILLIAMS: That may be. I don't
5 know.

6 DR. BURTON: The 2008 draft report it
7 has for G11 aquatic life fish consumption and
8 primary contact as the impairments.

9 MS. WILLIAMS: Where would you say G11
10 is? Where is that segment? Because I'm
11 really thinking that's G12 that's in the
12 study area, not G11. I wanted to clear that
13 up.

14 DR. BURTON: I don't have a map in
15 front of me. I'm sorry. Unless someone from
16 Illinois EPA can enlighten us on the
17 boundaries, we'll have to get a map.

18 BY MS. WILLIAMS:

19 Q. Okay. What is G12 listed as impaired
20 for?

21 MS. FRANZETTI: That's not one of the
22 ones. We can look on here and tell her.

23 DR. BURTON: It's all in code. Fish
24 consumption.

1 BY MS. WILLIAMS:

2 Q. What about G23?

3 A. Fish consumption.

4 MS. WILLIAMS: Why don't we move on to
5 Question 10 if that's okay, Counsel.

6 MS. FRANZETTI: That's fine.

7 BY MS. WILLIAMS:

8 Q. On Pages 10 to 11 of Attachment 1 and
9 Page 8 of your prefiled testimony, you discuss a
10 recent USGS study of the Illinois River Basin. When
11 was the study performed? Is this the 2004 --

12 A. Yes.

13 Q. -- study you're referring to? So was
14 it performed from --

15 A. The study was conducted in 1991 to
16 2001 in the upper Illinois river basin.

17 Q. And what locations in the Upper
18 Dresden Island Pool or the Brandon Pool were studied
19 in that study?

20 A. I don't know if any were in that
21 section. They may have been upstream of that
22 section. I don't have the study open in front of
23 me.

24 Q. Okay. Then why don't you answer the

1 last part of that question. Explain why you think
2 the USGS study is relevant and why the Illinois EPA
3 is, quote, not considered the important results and
4 findings of the USGS study?

5 A. The reason this study is relevant is
6 because it further documents the high levels of
7 contaminants in this waterway, the degree of
8 beneficial uses. It's documenting high levels of
9 ammonia, pesticides, PAHs. The other USGS study is
10 also documenting pharmaceuticals and personal care
11 products in both the water sediments linking
12 urbanization to poor invertebrate and fish
13 populations as seen in other urbanized areas. It
14 calls for data showing that there's contaminated
15 data present in many areas of the ship panel,
16 Brandon Pool, upper Dresden. I believe the study is
17 relevant because it's documenting degradation.

18 Q. But you said the study didn't study
19 those areas. I'm confused.

20 A. It's in just upstream. It's in the
21 same waterway.

22 Q. Upstream of the Sanitary and Ship
23 Canal?

24 A. It's the same watershed. So what my

1 testimony is going to show through the day is that
2 the areas from Dresden Pool up are severely
3 contaminated. This is but one more study that
4 documents that.

5 Q. When you say up, do you mean up the
6 Des Plaines River to Wisconsin?

7 A. Yes.

8 Q. Or do you mean up the Chicago Area
9 Waterway System?

10 A. I'm referring to my first answer
11 really, the UIW.

12 MR. ETTINGER: This is Albert
13 Ettinger. I represent a number of
14 environmental organizations here. Good day.
15 When you say the Upper Illinois Waterway and
16 up, are you including the upper Des Plaines
17 which merges with the Sanitary and Ship Canal
18 after coming down from Wisconsin but is not
19 actually navigable above the merger with the
20 Sanitary Ship Canal?

21 DR. BURTON: I guess I'm finding it
22 difficult to separate out upstream influences
23 because water flows down hill and the
24 sediments flow downstream. So anything

1 that's happening in the upper watershed is
2 going to impact the lower watershed. So it
3 really becomes, I think, artificial to assume
4 anything upstream of downtown Chicago is not
5 an important factor. So I have to talk about
6 the watershed inputs, and we know there's
7 contamination upstream of Chicago, we know
8 the north branch is heavily contaminated, so
9 all of that is playing into my conclusions
10 that we have a very degraded system.

11 MR. ETTINGER: Okay. I'm -- not to
12 give a geography quiz here, but the upper Des
13 Plaines, much of it is not upstream of
14 downtown Chicago; maybe downtown Elmhurst.
15 I'm trying to determine whether you're
16 including that area which does not, in fact,
17 flow through Chicago as part of this area
18 that you consider relevant to the Upper
19 Illinois Waterway.

20 DR. BURTON: It's hard to rank
21 relevance. It's less relevant obviously.
22 The things that are happening that are
23 flowing into the Ship Canal are more relevant
24 because of their proximity to the mass of the

1 loading, I guess, is what I would say.

2 MR. ETTINGER: Okay. Now, are you --
3 what is your understanding of the relative
4 flow of the Sanitary and Ship Canal versus
5 the upper Des Plaines which does not go
6 through Chicago?

7 DR. BURTON: You mean quantity of
8 flow?

9 MR. ETTINGER: Yes.

10 MS. FRANZETTI: Contributing to the
11 downstream upper Dresden Island Pool area?
12 When you say relative flow, that's what you
13 mean, it --

14 MR. ETTINGER: Yes. What is the
15 flow -- what's your understanding of the --
16 Let's drop back a second.

17 The water which is in the Lower
18 Des Plaines below Branden Road Lock and Dam
19 is made up of flow from the Sanitary and Ship
20 Canal and the upper Des Plaines. Do you
21 agree with that?

22 DR. BURTON: Right.

23 MR. ETTINGER: Okay. What is your
24 understanding of the relative contributions

1 of water from the Sanitary and Ship Canal
2 versus the Upper Des Plaines?

3 MS. FRANZETTI: Albert, you don't
4 want -- he's saying I don't have the specific
5 flow numbers.

6 MR. ETTINGER: I'm not looking for
7 flow numbers. I'm just trying to gauge in
8 terms of relevance. We've heard that some
9 waters are more relevant than others. I'm
10 just trying to gauge your understanding. I
11 mean 10 to 1, sort of 10 to 1, 1 to 5, some
12 sort of idea; bigger than a bread box sort of
13 scale to which you feel is contributing the
14 water to the area that is the primary focus
15 of this proceeding.

16 DR. BURTON: Right. And I didn't do a
17 flow comparison. There's a greater amount of
18 flow coming down the Ship Canal. That is all
19 going to change with storm events, though.
20 You know, if you get a large storm event on
21 one side of the watershed, the Des Plaines is
22 draining. It's going to have an impact on
23 your loadings. I haven't looked at that.

24 MR. ETTINGER: Okay. So sitting here

1 today, you really don't have an idea of the
2 relative flow of the upper Des Plaines versus
3 the Sanitary and Ship Canal.

4 DR. BURTON: I believe it's greater
5 for the Ship Canal.

6 BY MS. WILLIAMS:

7 Q. I don't know if we asked the last part
8 of 10. What other river basins did USGS compare to
9 the Illinois River basin in the Groschen 2004 study?

10 A. Okay. The USGS has a nationwide
11 network of water quality monitoring stations at 109
12 streams and rivers that are in 51 major river
13 basins. In their article they ranked the pollutant
14 concentrations that were measured at the same time
15 nationwide for the Des Plaines -- or the upper
16 Illinois to have the fourth highest levels of
17 ammonia, the highest levels of nitrate, the sediment
18 PAHs were the highest, 25 percent to 5 percent, and
19 DDT was in the top 5 percent.

20 Q. Could you answer what other river
21 basins?

22 A. Well, there's 51 of them, and they
23 actually didn't state, but it's their nationwide
24 network. They didn't list all those 51.

1 Q. So you don't know which ones they are?

2 A. No.

3 Q. On Page 4 you discuss the causes of
4 impairment in Hickory Creek. Are you suggesting
5 that because that water body is not currently in
6 attainment with the general use designation, that it
7 is incapable of attaining these uses?

8 A. My review and discussion of the IEPA's
9 multiple list causes of impairment to Hickory Creek
10 is relevant because several of the causes are not
11 chemical specific, but rather include alteration of
12 stream side or littoral vegetation, flow alterations
13 and sedimentation and siltation. The IEPA listed
14 among the causes of these impairments such things as
15 urban run-off, channelization, and flow regulation
16 structures. I'm also aware that one of the city of
17 Joliet's POTW discharges into Hickory Creek just
18 upstream of its confluence with the Lower Des
19 Plaines which is right below the Brandon Lock & Dam
20 and directly into the tail waters. These
21 impairments and their causes are indications of
22 conditions that may prevent Hickory Creek from
23 obtaining its general use designation. I do not
24 know for a fact if it is incapable of attaining its

1 uses. That would require additional research, and I
2 did not find evidence of that additional research in
3 the UAA report or materials that have been filed in
4 these proceedings by the IEPA.

5 Q. And would you agree that it's true
6 many waters are not currently attaining their
7 highest attainable uses?

8 A. Is that a question?

9 Q. Yes.

10 A. Yes. They are not.

11 Q. On Page 5 of the Attachment 1 you
12 discuss four tributaries to the Lower Des Plaines
13 and the sources of impairment of aquatic life uses
14 in these streams. The streams discussed are Hickory
15 Creek, Grant Creek, Jackson Creek, and the DuPage
16 River. Are each these waterways designated as
17 general use waters?

18 A. That is my understanding.

19 Q. Is it your testimony that these waters
20 are having a negative impact on the Lower Des
21 Plaines?

22 A. Yes. I believe they're contributing
23 negatively because the waters are flowing into the
24 Des Plaines.

1 Q. Do you know what portion of the flow
2 of the Lower Des Plaines River these sources
3 constitute?

4 A. The only data I could find on that are
5 the 7 Q10s which aren't very useful. In unusually
6 dry weathers, flows are small. If you compare the 7
7 Q10s, their poor quality is a reflection of the
8 degraded state of the entire watershed and show that
9 they do not function as desirable refugia for
10 sensitive species. However, it should be noted that
11 these are dry weather flows and they can
12 substantially increase with rainfall events and
13 resultant run-off, thus carrying additional
14 contaminants into the Des Plaines.

15 Q. Are there any other tributaries that
16 I've not listed there that you believe are
17 negatively impacting the Lower Des Plaines?

18 A. Not in this section of the river.

19 Q. What about upstream in the rest of the
20 Chicago area waterways? Are there other tributaries
21 that you believe are negatively impacting those
22 waterways? This is a Question D, I think, on here.
23 Question 12D.

24 A. Well, to some extent all the

1 tributaries to the CAWS would be having some
2 adverse effects, especially during wet weather
3 conditions. And due to the fact that all of them
4 have not been source inputs from heavily
5 human-dominated watersheds. These are all
6 human-dominated watersheds comprised primary of
7 urban and ag land use; thus subject to multiple
8 stressors. And that's in Chapters 2 and 3 of my
9 book. So based on IEPA's 2008 303(d) list, the
10 following are impaired tributaries to this section:
11 South fork of the south branch of the Chicago River,
12 Bubbly Creek impaired for indigenous aquatic life,
13 falls phosphorous, north branch of Chicago River
14 impaired for fish consumption, cause is mercury
15 PCPs; north shore channel impaired for aquatic life
16 fish consumption primary contact recreation; cause
17 is nickel, phosphorous PCB is fecal coliforms. West
18 fork of the north branch of Chicago River impaired
19 for accessible life, primary contact recreation,
20 causes chloride, DDT, phosphorus, total suspended
21 solids, fecal coliforms; middle fork of the north
22 branch Chicago River impaired for aquatic life,
23 primary contact recreation, causes chloride, DDT,
24 hexachlorobenzene sediment/siltation, total

1 suspended solids, fecal coliforms, alderin (ph.),
2 chlordane, pH, Skokie River impaired for aquatic
3 life, primary contact recreation, causes pH
4 phosphorous total suspended solids, fecal coliforms.
5 And it should be noted in the 2008 that the U.S. EPA
6 disagreed with IEPA's delisting of siltation, total
7 nitrogen, and dissolved oxygen as causes of
8 impairment. And that as in other reaches on the
9 Des Plaines and the DuPage back on to the 303(d)
10 list.

11 Q. You think it adds waters on to the
12 list or does it add an additional pollutant?

13 A. Both. It adds new segments according
14 to U.S. EPA document.

15 Q. Which new -- oh, according to the U.S.
16 EPA document. Never mind. That's fine. Have you
17 reviewed the Agency's response to that document?

18 A. No.

19 MS. FRANZETTI: Counsel, if we could,
20 just for clarity in the record, with respect
21 to -- if I can go back just for a moment to
22 the four tributaries you were talking about
23 in your prior question: The DuPage River,
24 the Grant Creek, Hickory Creek, and Jackson

1 Creek, and just -- if I could just ask a
2 question.

3 MS. WILLIAMS: Yes.

4 MS. FRANZETTI: Dr. Burton, when you
5 looked at those segments in the Illinois EPA
6 303(d) list, was it -- Were all of them
7 listed as impaired for aquatic life?

8 DR. BURTON: Yes.

9 BY MS. WILLIAMS:

10 Q. Dr. Burton, with regard to Jackson
11 Creek, I believe you mentioned only one of the two
12 segments. Why didn't you mention that the segment
13 closer to the Des Plaines River was assessed as
14 attaining aquatic life use?

15 MS. FRANZETTI: Counsel, I've got to
16 object because I don't know the basis for
17 your question. We're talking about two
18 segments. I don't know which two segments
19 you reference --

20 BY MS. WILLIAMS:

21 Q. Do you know if Jackson Creek has two
22 segments?

23 MS. FRANZETTI: And by segments,
24 Counsel, you mean the segments on -- that are

1 the basis for listing or not listing waters
2 on the 303(d) list?

3 MS. WILLIAMS: Right. I mean the way
4 he's been using it.

5 MS. FRANZETTI: Do you have the 303(d)
6 list for Jackson Creek, the portion that
7 deals with Jackson Creek?

8 MS. WILLIAMS: You mean the 305(b)
9 report?

10 MS. FRANZETTI: Yes, Appendix B2 that
11 has the 303(d) list.

12 MS. WILLIAMS: So that's not included
13 in what you provided in Exhibit 374, I take
14 it?

15 MS. FRANZETTI: No. I would just --
16 what I just want clear for DR. BURTON is to
17 show him that since it's very difficult to
18 identify the Agency's definition of the
19 segments of these waterways. It's not
20 contained in the 305(b) report or in the
21 appendix that is specifically the 303(d)
22 list. So if you're going to talk about two
23 segments of Jackson Creek, I ask you to
24 please show him where those two segments are.

1 MS. WILLIAMS: In the report, where
2 they're listed in the report or where they
3 are --

4 MS. FRANZETTI: Geographically would
5 be much more helpful.

6 BY MS. WILLIAMS:

7 Q. You said you reviewed this report,
8 right?

9 A. Right.

10 Q. I'm going to show you --

11 HEARING OFFICER TIPSORD: This report.
12 You're going have to specify which report.

13 MS. WILLIAMS: Agency's 2008 draft
14 integrated report and 303(d) list. And it's
15 the same -- portions of the same document
16 that's 374. I'm just going to show you
17 Page 45, which I don't think is included.

18 HEARING OFFICER TIPSORD: I was going
19 to say that's not marked in as an exhibit nor
20 the record at this point.

21 MS. WILLIAMS: No. I believe we may
22 have included a link to the website at the
23 request of Dr. Girard, but I'm not sure.
24 Maybe somewhere in the record already.

1 HEARING OFFICER TIPSORD: We need to
2 refer to it so that we know -- everybody
3 knows what you --

4 MS. WILLIAMS: I didn't bring a copy,
5 so I can't -- I may have to do it later then.

6 You don't know how many
7 segments Jackson Creek has, correct?

8 MS. FRANZETTI: Again, for 303(d)
9 listing purposes?

10 MS. WILLIAMS: For 305(b) assessment
11 purposes.

12 DR. BURTON: No.

13 BY MS. WILLIAMS:

14 Q. So you don't know whether all segments
15 in Jackson Creek are on the 303(d) list or not,
16 correct?

17 A. I do not recall.

18 Q. Okay. Thank you.

19 Are you aware that the segment you
20 referred to in your report is 10 miles upstream from
21 the Des Plaines River?

22 MS. FRANZETTI: I'm going to object to
23 foundation for that unless you can show --

24

1 BY MS. WILLIAMS:

2 Q. Do you agree with me that the segment
3 you listed in your report is 10 miles upstream?

4 MS. WILLIAMS: I don't understand how
5 you can object to that question.

6 MS. FRANZETTI: Because you have not
7 established that is 10 miles upstream.
8 That's why I'm saying if you have a map
9 showing where that segment is, but
10 otherwise --

11 HEARING OFFICER TIPSORD: Dr. Burton,
12 do you know how far upstream the segment
13 you're referring to is --

14 DR. BURTON: No, I don't. I made my
15 best effort based on the maps and the lack of
16 description of where the segments are to pick
17 the relevant segments.

18 HEARING OFFICER TIPSORD: Thank you.

19 BY MS. WILLIAMS:

20 Q. Do you have -- I think there's one
21 piece of Question 12 I didn't ask yet, is do you
22 know what impact total maximum daily load
23 allocations for these water bodies; and by these
24 water bodies, I'm referring back to the four Hickory

1 Creek, Grant Creek, Jackson Creek, and DuPage River
2 may have on the lower Des Plaines River?

3 A. Well, as I noted previously, several
4 of the causes of listed impairments are not from
5 point sources; that is, urban run-off,
6 channelization, flow regulation structures that are
7 discharging effluent to these water bodies.
8 Therefore, based on my understanding, the TMDLs
9 would determine each of these streams' assimilated
10 capacity with respect to a given pollutant. It
11 would then be followed by assigning this capacity
12 among the point sources. I would not expect that a
13 TMDL is going to have the effect of eliminating the
14 nonpoint source causes of impairments that have been
15 identified.

16 Q. Why don't -- can you define for us
17 when you say nonpoint source causes of impairments,
18 I think sometimes there's some confusion in how that
19 term is used.

20 A. Well, we've submitted Chapters 2 and 3
21 that give extensive explanations of what that's
22 comprised of. It's basically everything that's
23 run-off and --

24 Q. So there may be things that are

1 regulated as a point source within your definition
2 of the term nonpoint source run-off. Do you believe
3 that?

4 A. Such as coming out the end of a pipe.

5 MS. FRANZETTI: Such as CSOs, Counsel,
6 that come out of pipe? Is that what you
7 mean?

8 BY MS. WILLIAMS:

9 Q. Or municipal separate storm water
10 systems.

11 A. If it's storm water run-off, yes.

12 Q. Question 13: Please explain the
13 following statement from Page 4 of your testimony
14 and Page 5 of Attachment 1 that, quote, there is no
15 documented evidence of significant improvement and
16 beneficial use attainment in the Upper Illinois
17 Waterway since the 1970s. And the first subpart
18 asks, what do you mean by beneficial use attainment
19 in this sentence?

20 A. Well, I was using this term primarily
21 to refer to the degree of improvement towards
22 attaining what are generally understood to be whole
23 supported beneficial uses such as a balance aquatic
24 life population and primary recreation for the areas

1 in UIW they're including in this rulemaking. And
2 much of the work studies I am involved in or have
3 reviewed, the phrase beneficial use attainment is
4 used interchangeably with achieving designated uses
5 under the Clean Water Act. In his 2008 final report
6 330(d), Illinois EPA also noted that it refers to
7 beneficial uses to mean the same thing as designated
8 uses and stated that states must report the resource
9 quality of their waters in terms of the degree to
10 which the beneficial uses of those waters are
11 attained.

12 Q. Is it your testimony that there's
13 no -- been no improvement in the CAWS, and by CAWS I
14 mean Chicago Area Waterway System and Lower Des
15 Plaines River, since the 1970s?

16 A. No. That's not a correct
17 characterization of my testimony. And the sentence
18 you're referring to from Page 4 of my prefiled
19 testimony, I testified that water quality in the UIW
20 has improved somewhat since the 1970s. I agree that
21 the chemical water quality of the CAWS and the Lower
22 Des Plaines has improved over the past 20 or more
23 years; nevertheless, as evidence from the USGS
24 studies and multiple sediment studies, the chemical

1 concentrations are still linked to adverse
2 biological effects. In addition, physical
3 conditions that contribute to poor habitat such as
4 the flow alterations, the lack of refugia,
5 siltation, do not appear to have improved and all of
6 these factors must be considered when attempting to
7 characterize ecosystem quality and its related
8 beneficial uses.

9 Q. Can you repeat again which part you
10 said has not improved?

11 MS. FRANZETTI: Not a part of the
12 waterway. You mean -- in what respect is the
13 ecosystem --

14 DR. BURTON: Well, I was --

15 BY MS. WILLIAMS:

16 Q. Some factors have improved and some
17 have not?

18 A. The physical conditions that
19 contribute to poor habitat have not improved.

20 Q. And what are those physical
21 conditions?

22 A. Flow alterations, lack of refugia,
23 siltation.

24 Q. Have you relied on any biological data

1 to reach your opinion regarding beneficial use
2 improvements?

3 A. Yes, to a limited degree. I primarily
4 relied on my studies of contamination and toxicity,
5 chemical data, and the cited IEPA reports.

6 Q. Does the biological -- So you're
7 talking about laboratory data primarily?

8 A. Well, some of mine was field.

9 Q. Okay. Which of the data are we
10 referring to as field data? I mean I know you took
11 sediment samples, but as far as biological data --

12 A. I forgot to mention MWRD studies.
13 They did benthic invertebrate studies. And the
14 studies that I submitted here were laboratory, and
15 they were field-based toxicity studies.

16 Q. Have you reviewed any of the --

17 MS. FRANZETTI: Counsel, can you just
18 give me a second. Because I think there may
19 be another aspect of data that he is
20 referring to.

21 DR. BURTON: Right. And I also looked
22 at the EA reports that showed the biological
23 community improved noticeably between the
24 '70s and the '80s, and that coincides with

1 the greatest improvement in water quality.
2 However, the data collected by EA further
3 indicated that there's been only slight
4 improvement since the '80s. These data show
5 that despite some improvements, none of the
6 areas studied by EA attain Clean Water Act
7 aquatic life use goals. There's been a
8 slight improvement in biological conditions,
9 there's like, for example, there's a greater
10 abundance of the tolerant fish species, but
11 things such as species, richness, and
12 wellness scores have not improved.

13 BY MS. WILLIAMS:

14 Q. Dr. Burton, did you talk about any of
15 those or cite any of those EA studies in your
16 report?

17 A. That's -- I don't believe so. I
18 believe that was all submitted by Mr. Seegert during
19 his testimony.

20 Q. Would you say the ammonia levels in
21 this system have been reduced since the 1970s?

22 A. Yes. But my studies in the mid '90s
23 still found toxic levels of ammonia and surficial
24 sediments. And this shouldn't be a surprise given

1 the huge nitrogen load to the system. The USGS also
2 found high ammonia levels in 1991 to 2001. The new
3 lower U.S. EPA criteria for ammonia are expected
4 soon. These levels may be 0.3 milligrams per liter
5 as total ammonia. And the MWRD is continuing to
6 find high levels of ammonia in sediments in areas
7 upstream of Dresden Lock & Dam.

8 Q. So did USGS study indicate whether
9 water quality standards for ammonia were being
10 exceeded in their studies?

11 A. No. They were simply comparing
12 concentrations across their 51 watersheds.

13 Q. The last piece of that Question 13,
14 I'm not sure if we've answered this or not yet, but
15 hasn't the quality of the CAWS and the Lower Des
16 Plaines, in fact, improved greatly since the 1970s?

17 A. Well, it kind of depends on what
18 you're referring to in terms of quality. If you're
19 referring to specific chemical and pollutant levels
20 for several of them, it may be correct to state that
21 levels have been reduced significantly since the
22 '70s, and to label this as a great improvement. But
23 based on the EA reports I'm familiar with and
24 discussions with Mr. Seegert, I believe it's correct

1 to state the fish community has not significantly
2 improved in recent years.

3 Q. Based on what Mr. Seegert had to say,
4 is that your conclusion?

5 A. Yes.

6 Q. Did you review Mr. Seegert's data?

7 A. Excuse me?

8 Q. Did you -- You reviewed Mr. Seegert's
9 data, though, also, right?

10 MS. FRANZETTI: By Mr. Seegert's data,
11 Counsel, are you referring to the EA reports?

12 MS. WILLIAMS: Correct.

13 MS. FRANZETTI: Okay. I think he's
14 already said it was based on the EA reports
15 and then talking with Mr. Seegert.

16 DR. BURTON: Yes.

17 BY MS. WILLIAMS:

18 Q. And so you disagree that those reports
19 show improvements in species diversity and richness?

20 A. I believe I said that they have not
21 shown improvement in recent years. They've shown
22 increases in numbers of tolerant species.

23 Q. So you think they've shown increase of
24 numbers in recent years but not in diversity?

1 A. Right. Numbers of tolerant species.

2 Q. Fourteen: When you state on Page 2 of
3 Attachment 1 that one important component of a
4 weight of evidence approach is that dominant,
5 stressors including their spacial and temporal
6 patterns, are clearly identified. Describe what you
7 mean by weight of evidence?

8 A. Multiple means of assessing ecosystem
9 quality, multiple lines of evidence that would be
10 physical, chemical, biological, and toxicological.
11 Each of those has its own unique strengths and
12 weaknesses. The decisions of impairment are based
13 on a preponderance of data as long as the data are
14 valid, appropriate, relevant, and correctly
15 analyzed.

16 Q. How does it deal with multiple
17 stressors?

18 A. I look at the use in many ways to
19 assess multiple stressors. I would recommend
20 submitting to -- I would recommend reviewing two of
21 the papers I've written on this: One is a lit
22 review of weight of evidence methods and the other
23 is a framework for conducting weight of evidence
24 which are items No. 11 and 12.

1 MS. FRANZETTI: On Exhibit 371, the
2 index to the documents that are on the CD.

3 DR. BURTON: In addition, the U.S. EPA
4 describes a weight of evidence-based approach
5 for identifying dominant stressors and
6 linking the adverse effects or establishing
7 causality in their 2002 guidance document
8 which is item No. 14 on Exhibit 371.

9 BY MS. WILLIAMS:

10 Q. Is there a year for that document?

11 A. Excuse me?

12 Q. There's not a year listed on your --

13 MS. FRANZETTI: On 17?

14 MS. WILLIAMS: Fourteen.

15 DR. BURTON: 2002. Sorry.

16 HEARING OFFICER TIPSORD: That's the
17 EPA Stressor Identification Guidance
18 document.

19 DR. BURTON: Yes.

20 BY MS. WILLIAMS:

21 Q. And this is U.S. EPA, I'm assuming?

22 A. U.S. EPA.

23 Q. Are you aware of any examples that you
24 have worked on where a weight of evidence approach

1 has been utilized in a use attainability analysis?

2 A. This approach of weight of evidence
3 really didn't become commonly used until the last
4 few years. I have not reviewed use attainability
5 studies in the last few years, so no.

6 Q. So explain to us a little bit how when
7 you know you have multiple stressors, how do you go
8 about figuring out the relative dominance of each of
9 those stressors?

10 A. It's very difficult, particularly in
11 systems where there are so many stressors like the
12 UIW. One of the methods for separating out the
13 dominant chemical stressors is through toxicity
14 identification recommendations as recommended by
15 U.S. EPA. Another way is the weight of evidence
16 framework that I published, or the U.S. EPA guidance
17 document that I just cited, No. 14. Recently a TIE
18 was conducted by Southern Illinois University which
19 we've already, I believe, submitted, Mahler, et al.,
20 2010. They found that 46 percent of the UIW
21 sediments had significant toxicity due to PAHs.
22 These compounds were identified as one of the
23 principal contaminants also by the studies we did in
24 the mid '90s and the more recent ones in 2008 by EA.

1 Q. So I believe that The agency has
2 presented testimony that it has found low levels of
3 dissolved oxygen and high temperature to be limiting
4 factors or major stressors to this system. Would
5 you agree with that?

6 MS. FRANZETTI: Counsel, a
7 clarification: The Agency has found where?
8 In the context of in this UAA? That's the
9 Agency's position in what it found.

10 MS. WILLIAMS: I think the testimony
11 supports that, yeah.

12 MS. FRANZETTI: Well, I will tell you
13 Dr. Burton did not review all of the Agency
14 testimony, and I don't think that that was
15 laid out in your written filings.

16 BY MS. WILLIAMS:

17 Q. I want to know if he believes those
18 are two major stressors in the system?

19 A. They're stressors, but there hasn't --
20 I haven't seen evidence that they're major
21 stressors.

22 Q. Okay. What evidence would you want to
23 see?

24 A. A well-designed study with good data

1 if it's done in a weight of evidence manner.

2 Q. So in the absence of such a study --
3 have you seen any studies that -- Have you seen any
4 studies that have ruled out these two stressors as
5 major stressors in this system?

6 A. I would say the absence of
7 documentation from considering how much is waterway
8 has been studied, I would say they're not major
9 stressors.

10 Q. So you don't think there's any
11 evidence in the record of that?

12 A. There are DO sags that are occurring,
13 and that is a point of continued study. I believe a
14 huge grant was just awarded by the water environment
15 research foundation to study DO sags in this system
16 and their effect on fish populations. So that study
17 should establish. The studies I did in the mid '90s
18 were pointed towards temperature. So I was looking
19 at temperature.

20 Q. Okay.

21 A. I think we're going to talk about that
22 later.

23 MR. ETTINGER: Can I follow up on that
24 very quickly? You said the Water Environment

1 Federation just gave a grant to study DO. Do
2 you know who they gave a grant to?

3 DR. BURTON: LimnoTech. It was the
4 research foundation of Water Environment
5 Federation.

6 MR. ETTINGER: Right. Water
7 Environment Federation of -- yeah.

8 MR. ANDES: May I a clarify this.
9 Fred Andes. Just a follow-up question on
10 that. Is it your understanding Water
11 Environment Federation and Water Environment
12 Research Foundation are two different
13 organizations?

14 DR. BURTON: I said Water Environment
15 Research Foundation.

16 MR. ANDES: Not the Water Environment
17 Federation.

18 DR. BURTON: Right.

19 MR. ANDES: So WERF is funding a
20 study?

21 DR. BURTON: That's my understanding.

22 MR. ANDES: And the topic again was?

23 DR. BURTON: The effects of dissolved
24 oxygen on fish populations.

1 MR. ANDES: Do you know when the
2 results of that study are going to be
3 available?

4 DR. BURTON: I think the contract
5 hasn't even been let yet. It should happen
6 in this month.

7 MR. ANDES: Okay. Thank you.

8 MR. ETTINGER: I'm sorry. Fish
9 populations generally or fish populations in
10 this system?

11 DR. BURTON: In this system.

12 HEARING OFFICER TIPSORD: Is that all,
13 Fred?

14 MR. ANDES: Yes.

15 BY MS. WILLIAMS:

16 Q. Please explain what is meant on Page 4
17 of your prefiled testimony when you state, quote, it
18 is important to understand that with many urbanized
19 watersheds such as the Des Plaines, the removal of
20 one stressor alone will not be sufficient to restore
21 a watershed to beneficial water use attainment.

22 MS. FRANZETTI: Counsel, I'm sorry.

23 Oh, 15? Were you just reading Question 15?

24 MS. WILLIAMS: I just read Question

1 15, yes.

2 MS. FRANZETTI: Thank you.

3 BY MS. WILLIAMS:

4 Q. I think it might be better first to
5 clarify what you mean by Des Plaines watershed here,
6 because I think up until now we've used different
7 terminology than that. So can you explain what you
8 mean here by the Des Plaines watershed?

9 A. Everything that flows into the Des
10 Plaines.

11 Q. Okay. So that's broader than the
12 Upper Illinois Waterway?

13 A. Yes. That's what a watershed
14 typically means, everything.

15 Q. Okay. Then what are some other
16 urbanized watersheds that you've studied?

17 A. Well, in the storm water assessment
18 handbook that I submitted I had to review hundreds
19 of urban run-off studies, so those are too numerous
20 to list. So if I limit my answer to those that I've
21 been the subject of my own research, those would
22 include multiple watersheds of the great Miami River
23 near Dayton, Ohio, the Ottawa River at Lima, the
24 Black River at Lorraine, Ohio, the Purdue River in

1 Denver, the north branch of the Des Plaines, the
2 east branch of the Calumet, a state-wide assessment
3 of all monitored watersheds in Ohio, a nationwide
4 assessment of all monitored watersheds in England, a
5 number of human impacted watersheds that were a
6 mixture of land uses ranging from urban, ag,
7 industrial at sites like the Clark Fork River, the
8 lower Housatonic, the Sebasticook, the Arkansas
9 River, Waukegan Harbor, Saginaw Bay, Indiana Harbor,
10 Buffalo River, San Diego Bay, Pensicola Bay, and
11 harbors in Auckland, New Zealand. In addition, as
12 part of the National Research Council Committee on
13 evaluating the effectiveness of dredging at
14 superfund mega sites, we closely studied 20 systems
15 in the U.S. that were contaminated with multiple
16 stressors.

17 Q. So what I'm reading out of this
18 statement from your testimony is that generally
19 speaking urbanized watersheds, if you just remove
20 one stressor, you will not attain Clean Water Act
21 goals; is that correct?

22 MS. FRANZETTI: You are assuming as
23 the basis for your question that you're
24 talking about urban watersheds that, in fact,

1 have multiple stressors, correct? So when
2 you refer about removing --

3 MS. WILLIAMS: No. I'm asking if he's
4 generalizing that all urban watersheds have
5 multiple stressors. Well, I asked him
6 originally to explain his statement. So
7 maybe it would be better if we go back to the
8 please explain the statement on Page 4. I
9 take it to mean that most urbanized
10 watersheds have multiple stressors.

11 MS. FRANZETTI: Well, you didn't say
12 that --

13 MS. WILLIAMS: So why don't you
14 explain.

15 DR. BURTON: Correct.

16 MS. WILLIAMS: Correct?

17 MS. FRANZETTI: What's correct?

18 DR. BURTON: That if you move just
19 one, it's probably not going to fix it.

20 BY MS. WILLIAMS:

21 Q. But if you don't remove one, you
22 certainly won't fix it, right? I mean how will you
23 then fix it?

24 A. Well, the answer has to be site

1 specific, and it really depends on a variety of
2 factors: Magnitude, frequency, duration of each of
3 the stressors available, refugia, habitat quality,
4 bio availability of the contaminants, sensitivity of
5 your populations, your fish and invertebrates. So
6 you really can't generalize. It may be that you
7 have to rank them. That's what the weight of
8 evidence is all about. You have to rank which
9 stressors are dominant.

10 Q. And then you would go about doing
11 what, only setting standards for the ones that are
12 most dominant?

13 MS. FRANZETTI: Do you understand that
14 question?

15 DR. BURTON: Setting standards?

16 MS. FRANZETTI: Counsel, I don't --

17 MS. WILLIAMS: I'm --

18 MS. FRANZETTI: Your question is not
19 clear.

20 BY MS. WILLIAMS:

21 Q. What's the purpose of this ranking of
22 dominance in the context of the use attainability
23 analysis?

24 A. Well, if the goal is Clean Water Act

1 and it's to have the beneficial uses being met, the
2 manager has to make a decision on how to improve the
3 waterway. And one would think the manager would
4 want to know what the dominant stressors are so that
5 they can manage that stressor.

6 Q. And by manage the stressor, in this
7 context you mean what?

8 A. It would depend on the stressor. If
9 it's physical habitat it would improve the physical
10 habitat. If it's contaminated sediments, it would
11 be remove the contaminated sediments.

12 Q. If it's high temperature levels?

13 A. It would be reduce the temperature
14 levels.

15 Q. Do you know if the completion of TARP
16 will continue to remove stressors from this system?
17 This is Question E.

18 A. The completion of TARP will achieve
19 progress in reducing CSO stressors in the present
20 system. I didn't say it would not improve water
21 quality further. What my testimony said was that
22 the completion of TARP will not improve things
23 enough to attain the Clean Water Act aquatic life
24 goals.

1 Q. How can you tell that?

2 A. Due to the preponderance of nonpoint
3 source and point source inputs that will remain.
4 The siltation, sedimentation conditions that will
5 remain, the poor habitat that will remain, the flow
6 control regime that will remain, the contaminated
7 sediments, the high nutrient loadings, and elevated
8 pharmaceuticals and personal care concentrations are
9 but a few.

10 Q. But if you don't believe that the
11 Agency has done rigorous enough studies to determine
12 whether temperature and dissolved oxygen are
13 dominant stressors, how can you determine that
14 improvement of those stressors won't result in
15 aquatic life use attainment? How have you concluded
16 that this one -- that the stressors you're
17 identifying are dominant over ones you haven't
18 studied?

19 A. Based on the preponderance of data
20 from multiple sources. The document adverse
21 biological effects directly were linked to these
22 stressors that occur in this system.

23 Q. And by these --

24 A. And those stressors are not being

1 removed by TARP.

2 Q. And by these stressors, are we
3 speaking broadly: Habitat?

4 A. Like the ones I just mentioned.

5 Q. What studies -- you say -- I'm going
6 to get the phrase right -- preponderance of
7 evidence, preponderance of data are you referring
8 to? Did you include pharmaceuticals and what have
9 you in your -- I think you included that in your
10 list.

11 A. Yes.

12 Q. What is this preponderance of evidence
13 on pharmaceuticals that you're talking about?

14 A. We're getting to that question later
15 if -- I mean you asked that question later. It's
16 the long list of studies that I've submitted here
17 that document the occurrence of these stressors in
18 this system or in systems that are similar; heavily
19 urbanized effluent dominated systems.

20 HEARING OFFICER TIPSORD: Before you
21 move on to Question 16, we'll take a short
22 break if you think we're ready to do that
23 now. Take about ten minutes.

24 (Short break taken.)

1 HEARING OFFICER TIPSORD: Back on the
2 record.

3 BY MS. WILLIAMS:

4 Q. I think we left off on Question 16,
5 Dr. Burns. Mr. Seegert has identified that UAA
6 Factor 2 which refers to natural, ephemeral,
7 intermittent, or low flow conditions or water
8 levels that prevent attainment of the use applies to
9 these waterways. Do you agree?

10 A. I did not evaluate the UAA factor
11 to -- flow alterations weren't part of my
12 evaluation.

13 MS. FRANZETTI: And that's, Counsel, I
14 think also stated at Page 13 of his
15 testimony, written testimony.

16 BY MS. WILLIAMS:

17 Q. Question 17: When you state that
18 three of the six UAA factors apply to the Upper
19 Illinois Waterway, please explain which waters
20 you're referring to. I know we've talked about this
21 before, but --

22 MS. FRANZETTI: That's all right.
23 He'll clarify.

24 MS. WILLIAMS: Can you clarify? Okay.

1 Thank you.

2 DR. BURTON: I was specifically
3 including the south branch of the Chicago
4 Sanitary and Ship Canal and the Upper Dresden
5 Island Pool areas.

6 MR. ETTINGER: Excuse me. What is the
7 south branch of the --

8 DR. BURTON: South branch of the
9 Chicago River.

10 BY MS. WILLIAMS:

11 Q. And does your definition there include
12 the Branden Pool?

13 A. Yes.

14 MS. FRANZETTI: Isn't the Branden Pool
15 part of the Upper Dresden Island Pool in your
16 definition?

17 MS. WILLIAMS: No. It's part of the
18 Lower Des Plaines River.

19 MS. FRANZETTI: But isn't the lower
20 part of it part of UDIP? Not at all? I
21 think -- I thought you had a piece of that in
22 Upper Dresden Island Pool. Okay.

23 MS. WILLIAMS: Maybe we should --
24 Should we just maybe clarify a little better

1 is a matter of geography and water flow . I
2 would define the lower part or the bottom of
3 the Upper Dresden Pool to be the upper
4 Dresden Lock & Dam and for it to go up to the
5 next dam which is Brandon Road. Is that the
6 way we're interpreting it here or not?

7 MS. FRANZETTI: When you use the
8 phrase -- yes, when you say Upper Dresden
9 Pool. But we have the problem in this
10 proceeding that the Agency created the term
11 Upper Dresden Island Pool, and I think what
12 you just referred to slightly different,
13 isn't it?

14 MR. ETTINGER: Yeah. And I hadn't
15 heard the island distinction before.

16 MS. FRANZETTI: That's the defined
17 term in the proposed rules for this stretch,
18 I-55 bridge up to --

19 HEARING OFFICER TIPSORD: Okay. Can
20 we just, because this is going to really
21 confuse the record. I know we all understand
22 where we're going, but --

23 MS. FRANZETTI: I'm not sure we do.

24 HEARING OFFICER TIPSORD: To be clear,

1 these stretches of the Chicago River, Upper
2 Dresden Island Pool, Brandon Pool, Lower Des
3 Plaines River, these are all terms that are
4 defined in the proposed rule. So when we use
5 those terms, when the Agency uses those
6 terms, they're using them as defined in the
7 proposed rule. So let's just be clear that
8 I'm assuming that Dr. Burton also looked at
9 those definitions, and when he uses those
10 phrases he's also using those as defined in
11 the proposed rules, correct?

12 MS. FRANZETTI: That is correct.
13 Dr. Burton?

14 DR. BURTON: I try.

15 HEARING OFFICER TIPSORD: Thank you.

16 MS. FRANZETTI: And that's why we
17 don't segregate out Branden Pool. It's not
18 segregated out in the proposed defined terms
19 of these rules.

20 BY MS. WILLIAMS:

21 Q. Based on your analysis, Dr. Burton,
22 which waters specifically are not able to attain the
23 Clean Water Act Aquatic Life Use Goal?

24 MS. FRANZETTI: I'm sorry, Counsel,

1 with the discussion going on we both lost
2 what question you're on.

3 MS. WILLIAMS: I think I'm trying to
4 follow up, or actually rephrase Question 17.
5 Rather than asking about secondary contact
6 downgrade, I'd rather ask it which waters
7 that he analyzed are not able to attain the
8 Clean Water Act Aquatic Life Use Goals? I
9 think the question was a little confusing as
10 it's worded there.

11 DR. BURTON: It's the ones I just
12 said. It's from I-55 up to the south branch.

13 BY MS. WILLIAMS:

14 Q. So you think none of them are able to
15 retain any water goals?

16 A. Right.

17 Q. What about the -- So throughout the
18 Upper Illinois Waterways, you've defined it, those
19 are the only ones?

20 MS. FRANZETTI: No, that's not the
21 question he answered.

22 BY MS. WILLIAMS:

23 Q. That can't attain the goal?

24 A. No.

1 MS. FRANZETTI: Counsel --

2 MS. WILLIAMS: No, I know. That's not
3 the question.

4 MS. FRANZETTI: Why don't you ask him
5 if he's formed an opinion with respect to any
6 of the other waters.

7 MS. WILLIAMS: What other waters?

8 MS. FRANZETTI: I think the other
9 waters you were just including in your
10 question of other waters in the UIW.

11 BY MS. WILLIAMS:

12 Q. Do you have an opinion as to whether
13 any of the other waters in the Upper Illinois
14 Waterway are able to attain the Clean Water Act
15 Aquatic Life Use Goals?

16 A. Well, that was outside the study area,
17 so I didn't form an opinion on that.

18 Q. You didn't form an opinion on the
19 waters outside the study area?

20 A. In regards to the UAA factors.

21 Q. And by study area, we mean the water
22 subject to this proposal, not other waters that you
23 may have studied in the past?

24 A. Right.

1 Q. At the top of Page 4 of your testimony
2 you state, quote, until the stressors causing the
3 beneficial use attainments are reduced
4 significantly, there will be ongoing risk to the
5 aquatic biota and to humans that consume fish in the
6 CAWS and the Des Plaines River.

7 HEARING OFFICER TIPSORD: Miss
8 Williams, you misread. Beneficial use
9 impairments. You said beneficial use
10 attainments.

11 MS. WILLIAMS: Would you like me to
12 read it over?

13 HEARING OFFICER TIPSORD: No. That's
14 okay. I just wanted to clarify before you
15 finished the question that you meant
16 impairments, not attainments.

17 BY MS. WILLIAMS

18 Q. Explain what you mean by reduced
19 significantly?

20 A. I mean reduced to levels that allow
21 for a healthy, desirable aquatic community that is
22 diverse, reproduces, and is uncontaminated.
23 Stressor interactions prevent stating concentration
24 levels for individual contaminants, but having

1 levels below water and sediment quality guideline
2 thresholds is a best estimate for chemicals in
3 sediment toxicity stressors. And I'm including in
4 these stressors the effects of urban run-off and
5 CSOs. These chemical stressors, however, will not
6 alleviate the adverse impacts of other stressors in
7 the system, particularly those related to altered
8 flows and degraded habitat.

9 BY MS. WILLIAMS:

10 Q. I'm not sure I understood the part of
11 your answer related to sediment guidelines. Are you
12 saying that we have to get the sediment below those
13 guidelines in order to achieve an official use
14 attainment?

15 A. Well, as we will discuss later,
16 they've been used effectively all over the U.S.,
17 Canada, and Europe for those purposes.

18 Q. For those purposes meaning what?

19 A. For determining whether sediments are
20 causing adverse impacts to aquatic biota.

21 Q. But I asked about beneficial use
22 attainment. Are they used for that? Are they used
23 to determine attainment or lack of attainment with
24 Clean Water Act Aquatic Life Use Goals?

1 MS. FRANZETTI: Counsel, I'm going to
2 ask you to clarify what you mean by used. Do
3 you mean are they even looked at for
4 purposes --

5 MS. WILLIAMS: Are they relied on? Is
6 that fair?

7 MS. FRANZETTI: Do you think they
8 should be?

9 DR. BURTON: They always should be.
10 I'm not doing any of those evaluations as I
11 mentioned before.

12 BY MS. WILLIAMS:

13 Q. So do you not know or are you saying
14 they aren't but they should be?

15 A. They're used to evaluate the quality
16 of aquatic ecosystems. So I cannot imagine they
17 wouldn't be used.

18 Q. Question 19: When you say it is not
19 feasible to correct these factors or limitations
20 sufficient to attain the Clean Water Act goals, what
21 did you mean? Is feasible the same as physically
22 possible? And are the conditions irreversible? Is
23 that clear?

24 A. It's not feasible in the foreseeable

1 future to correct these factors or limitations
2 sufficiently because habitat will not be improved,
3 the system will be dominated by nonpoint source
4 loadings of urban and agricultural run-off, the
5 point source loadings of treated effluent are very
6 large, the quantify of highly contaminated sediments
7 will likely not be removed, be it dredging or
8 capping, and certainly not by flushing. The point
9 sources will continue to discharge pharmaceuticals
10 and personal care products which have been shown to
11 adversely effect aquatic ecosystems at levels that
12 are found in the UIW.

13 Q. So are you saying that for each -- I
14 have five factors here: Habitat, nonpoint source,
15 contribution, point source contribution,
16 contaminated sediment, and pharmaceuticals and
17 personal care products. You're saying each of these
18 conditions is irreversible in the foreseeable
19 future?

20 A. Yes, I am.

21 Q. And what -- How far into the future
22 are you looking to make that conclusion?

23 MS. FRANZETTI: Counsel, do you want a
24 specific year?

1 MS. WILLIAMS: No.

2 MS. FRANZETTI: Can he simply indicate
3 to you he's talking about many years into the
4 future?

5 MS. WILLIAMS: I would like something
6 more specific than many, but less specific
7 than an actual year. I'd like a number of
8 decades or -- five, ten, twenty would be a
9 fine range.

10 MS. FRANZETTI: You may have to do
11 this by factor. He may have to do it by
12 factor, Counsel.

13 DR. BURTON: Well, given TARP will not
14 fully be completed until 2024, and it's not
15 going to completely remove all the inputs
16 from outside of Cook County, it would have to
17 be more than two decades into the future.

18 BY MS. WILLIAMS:

19 Q. So you think --

20 DR. BURTON: I think the recent report
21 that I just saw that was submitted on habitat
22 to MWRD actually states that it would be very
23 difficult to improve the habitat. And having
24 been a part of so many evaluations of the

1 removal of contaminated sediments, I can't
2 imagine that that would happen just because
3 of the sheer cost would probably approach a
4 billion dollars if not more.

5 BY MS. WILLIAMS:

6 Q. So it's your conclusion that TARP
7 would have to be fully completed for that to result
8 in improvements in the waterway?

9 A. Certainly TARP will help, but we've
10 still got all of these others. And, as we'll talk
11 about later, TARP will not help with all of the
12 point source run-off issues that are occurring
13 outside of Cook County.

14 Q. What nonpoint source run-off issues
15 outside of Cook County are you referring to?

16 A. Urbanization and agriculture.

17 MR. ETTINGER: May I just ask now what
18 agricultural areas you're aware of that are
19 contributing to problems in this system?

20 DR. BURTON: It's in the maps that
21 were submitted in my testimony that have the
22 land uses, and it's Will County --

23 MS. FRANZETTI: Give us a minute,
24 Albert. There's some charts that he's got.

1 At least we can get you in the ballpark.

2 DR. BURTON: It's west and southwest
3 watershed area that's draining in below Will
4 County into the Des Plaines.

5 BY MS. WILLIAMS:

6 Q. Can you tell us which map you're
7 looking at? You might have. I missed it, but --

8 A. It's Appendix B of my prefiled
9 testimony which has urban and ag, land use, and
10 changes.

11 MS. FRANZETTI: It's multiple maps and
12 charts that are in Appendix B to his
13 Attachment 1 to his prefiled testimony,
14 Exhibit 369.

15 HEARING OFFICER TIPSORD: Page 26.

16 BY MS. WILLIAMS:

17 Q. Is Page 26 the map that you're looking
18 at when you answered your question? I'm just trying
19 to follow --

20 A. No. I was looking at multiple maps
21 here, so it was --

22 HEARING OFFICER TIPSORD: Page 26

23 is --

24 DR. BURTON: It's hard to separate

1 urban from ag because they're in the same
2 areas. You don't have one county that's all
3 ag.

4 MS. WILLIAMS: So do we have a map
5 that shows agriculture in here? Does it show
6 agriculture in here?

7 DR. BURTON: Map 10, Page 29.

8 MS. FRANZETTI: Which is back in 1990.
9 Then there's another --

10 MR. ETTINGER: Probably most of that
11 has been chewed up by now.

12 MS. FRANZETTI: Granted. Then there's
13 another one, the very first figure in
14 Appendix B, Page 26, Figure B1, estimated
15 land converted to urban land use between '92
16 and 2001 gives you more up-to-date
17 information. At the time Dr. Burton put his
18 testimony and report together, these were
19 some of the most recent data that he could
20 find.

21 DR. BURTON: It's taken from the 2000
22 census data, and it's showing a rapid
23 urbanization. And the urban inputs are
24 actually more problematic than the

1 agricultural. So the point of that is the
2 rapid urbanization in that part of the
3 watershed is going to cause problems.

4 MS. WILLIAMS: Do you have a
5 follow-up, Albert?

6 MR. ETTINGER: Well, I don't know
7 whether I'd do it now or later. I guess just
8 so that our terminology is clear again, what
9 do you mean by nonpoint pollution?

10 DR. BURTON: I'm talking about all
11 diffuse run-off. Not out after a pipe.
12 That's diffuse.

13 MR. ETTINGER: Okay. And I'm not
14 trying to test your knowledge of the Clean
15 Water Act, I just want to make sure that
16 we're all referring to the same thing so that
17 we understand your answer when you give it.
18 Would run-off for a construction site be
19 nonpoint in your review?

20 DR. BURTON: I'm calling it nonpoint.

21 MR. ETTINGER: Okay. And run-off from
22 an industrial site would also be nonpoint the
23 way you're using the term --

24 DR. BURTON: If it's not coming out of

1 a pipe, I'm calling it nonpoint source.

2 MR. ETTINGER: Thank you.

3 BY MS. WILLIAMS:

4 Q. What analysis did you do to determine
5 that agricultural run-off is limiting aquatic life
6 use attainment in this system?

7 A. Can you specify what you mean by this
8 system ag input? Are you talking about the whole
9 study area?

10 MS. FRANZETTI: Counsel, do you just
11 want him to explain to what extent
12 agricultural inputs are being identified by
13 him as part of the stressors in the area?

14 MS. WILLIAMS: I want him to explain
15 what analysis he did to determine that
16 agricultural run-off will, into the future,
17 prevent aquatic life use attainment in any of
18 the water bodies that you have indicated in
19 the foreseeable future will not achieve Clean
20 Water Act Aquatic Life Use Goals. What was
21 the analysis that you did? What data did you
22 look at? What studies did you do?

23 DR. BURTON: Well, I've already
24 testified to that. It includes all of the

1 nonpoint source studies, the storm water
2 run-off studies that comprise the book I
3 wrote with --

4 MS. WILLIAMS: We're just talking
5 about the agriculture.

6 DR. BURTON: That's the same. It's
7 all in the same. It was Storm Water Effects
8 Handbook. It was about urban and
9 agricultural run-off in human dominated
10 watersheds. And I've submitted a huge number
11 of references that document in an
12 agriculturally-dominated watershed, you'll
13 have multiple nonpoint stressors, primarily
14 pesticides, nutrients, and solids.

15 BY MS. WILLIAMS:

16 Q. Did you do an analysis to determine
17 that this is an agriculturally dominated watershed?

18 A. I'm not saying the watershed is
19 dominated. I'm showing that it's, by agricultural,
20 it's being shifted rapidly to urban which is more
21 problematic. That was documented in Appendix B.

22 Q. So you're saying that you're not
23 worried about agriculture as a limiting factor?

24 A. I am worried about agriculture.

1 Q. Not in general, but in this urbanized
2 system can we take agriculture out of the mix?

3 A. I'm worried about all of the
4 stressors. I can't separate them out. So there are
5 a lot of problems as we mentioned coming in from the
6 DuPage River and other tributaries that have ag
7 input, nutrients and solids primarily.

8 MS. FRANZETTI: If I can, Counsel,
9 just one point. Dr. Burton, are you
10 basically including agricultural inputs as
11 among the stressors in this Upper Dresden
12 Island Pool area that's part of Will County,
13 you've used the phrase outside of Cook
14 County, in both your filed testimony and in
15 your testimony today with regard to
16 agricultural inputs?

17 DR. BURTON: Yes.

18 BY MS. WILLIAMS:

19 Q. Yes what?

20 A. Yes.

21 Q. Yes, it's just one of the stressors?

22 A. Yes.

23 Q. One of the stressors preventing
24 attainment of the aquatic life use goals?

1 A. It's one of the causes, sources of
2 multiple stressors.

3 Q. Have you been able to use a weight of
4 evidence approach to determine the relative
5 dominance of this stressor?

6 A. It's multiple stressors, as I said,
7 and the dominant ones that I've listed here are
8 habitat, flow, siltation, contaminated sediments.
9 Those are the ones that are really dominating.

10 Q. More so than nonpoint source impacts?

11 A. Those are nonpoint --

12 Q. Habitat?

13 A. The sources of those are nonpoint
14 source. So let's back up a second and make sure
15 you're not separating out ag and urban here. Many
16 of the stressors cross both of those uses. But
17 that's in the Chapter 2 and the Chapter 3 that have
18 been submitted to evidence.

19 Q. Many sources cross agriculture and
20 urban?

21 A. Many of the stressors are found in
22 both urban and agricultural dominated systems.

23 Q. Generally?

24 A. Siltation.

1 Q. Generally?

2 A. Right.

3 Q. And all I was trying to get at with my
4 line of questions is if you'd done an analysis to
5 determine this system, which one or both or to what
6 degree? And I think is your answer no, you haven't
7 looked at that.

8 MS. FRANZETTI: Objection. No. I
9 think that -- that mischaracterizes his
10 testimony.

11 DR. BURTON: I think I just answered
12 that in the previous answer when I've said
13 I've done hundreds and hundreds of reviews of
14 systems like this, and I have not collected
15 data trying to assess the loading of ag
16 versus urban. That's a massive, massive
17 study to do. But there's no reason to assume
18 that this system would be unique and not
19 subject to those same stressors.

20 MR. ETTINGER: You would agree that if
21 we succeed in eliminating all agriculture in
22 the watershed that agriculture will not
23 continue to be a stressor on the system?

24 DR. BURTON: Yes, I would.

1 MR. ETTINGER: Okay. Have you looked
2 to the extent that that has been
3 accomplished, if accomplishment is the right
4 word, in this watershed?

5 DR. BURTON: Well, that's what some of
6 our -- one of the figures is showing that
7 change that's occurred in the last several
8 years, and it's been fairly dramatic. But
9 that's not a good thing.

10 MR. ETTINGER: I wasn't debating
11 whether it was a good thing or not. I was
12 just trying to ask you, have you studied,
13 other than to look at these relatively aging
14 maps that we will -- I think we agree are
15 probably not good given the rate at which
16 we're changing land use in this area, you
17 have not studied the extent to which
18 agriculture versus other sources of pollution
19 are contributing in this particular
20 watershed.

21 DR. BURTON: I think if one was to
22 look at the percent of the watershed that is
23 dominated by urban versus ag, one would have
24 to conclude the dominant is urban. It's one

1 of the most populated regions in the country.

2 MS. WILLIAMS: That cleared it up.

3 Thank you.

4 BY MS. WILLIAMS:

5 Q. Dr. Burton, when you talked about the
6 hundreds, I believe you said, of watersheds you
7 studied that are facing urbanization or agricultural
8 impacts, how many of those have been found to be
9 unable to attain the Clean Water Act Aquatic Life
10 Use Goals?

11 A. What those studies documented is that
12 there was aquatic life impairment, often severe
13 impairment that occurred in those watersheds.

14 Q. And those studies did not attempt to
15 find whether those impairments were irreversible,
16 did they?

17 A. The literature you would be referring
18 to would be -- I would categorize under restoration,
19 stream restoration kinds of literature. And the
20 recent findings by Margaret Palmer who is one of the
21 leaders in this and others is that urban stream
22 restorations usually do not work. In fact, I don't
23 believe she could find a single case where they did
24 work at actually improving aquatic life because they

1 tend to improve, try to improve the physical habitat
2 and can effectively deal with the multitude of other
3 stressors that are coming into the system.

4 Q. My next question --

5 MS. FRANZETTI: Counsel, if I can
6 interrupt, just as a point of reference, and
7 I will -- this is going to be hard. I'll put
8 it up for all of you and I'll introduce the
9 oversized maps that I did make. I think with
10 regard to Albert's point that our maps
11 attached to his testimony don't give you a
12 sense of what the urbanization is versus
13 agricultural. And I can introduce that
14 oversized map as the next exhibit. I'll also
15 be using it for other purposes. It is a
16 blow-up of Figure 3 to Dr. Burton's report --
17 excuse me -- to EA Engineering's sediment
18 study report that was attached to Mr. -- to
19 Dr. Burton's testimony.

20 HEARING OFFICER TIPSORD: As Appendix
21 C, correct.

22 MS. FRANZETTI: Correct. As Appendix
23 C.

24 HEARING OFFICER TIPSORD: If there's

1 no objection, we will admit EA Figure 3
2 Concentration of Total PAH and Total PCBs
3 that Exceed Sediment Quality Guidelines, a
4 map, as Exhibit 377. Seeing none, it's
5 Exhibit 377.

6 MS. FRANZETTI: And also move to
7 admit --

8 HEARING OFFICER TIPSORD: Let me mark
9 this one first.

10 MS. FRANZETTI: Blow-up of Figure 2 to
11 that same EA report Appendix B to
12 Dr. Burton's prefiled testimony. And the --
13 I'm sorry.

14 HEARING OFFICER TIPSORD: The EA
15 Figure 2, Concentrations of Metals That
16 Exceed Sediment Quality Guidelines will be
17 admitted as Exhibit 378 if there is no
18 objection.

19 Seeing none --

20 MR. ETTINGER: Well --

21 MS. WILLIAMS: 377 is figure what?

22 HEARING OFFICER TIPSORD: Three.

23 MR. ETTINGER: As you know, I'm not
24 real careful here, but I think it would be

1 better before I make no objection to at least
2 look at what the exhibit is since I can't --

3 MS. FRANZETTI: It's just a blow-up of
4 what was attached in Appendix C, the EA
5 report.

6 MR. ETTINGER: Oh, it isn't anything
7 new?

8 MS. FRANZETTI: Right. And I'm just
9 pointing out, Mr. Ettinger, given your
10 comment that the figures and census maps that
11 are attached to Dr. Burton's written report
12 aren't recent enough. This aerial was taken
13 in 2007. That still may not be recent enough
14 for you, but this area --

15 MR. ETTINGER: And this is also
16 attached to his testimony?

17 MS. FRANZETTI: Correct. And the
18 point is the aerial photo source is 2007, and
19 you can see that while there is certainly a
20 lot of urbanization in the Will County area
21 in the Upper Dresden Island Pool, there is
22 still a lot of open agriculture land.

23 HEARING OFFICER TIPSORD: So there is
24 no objection to admitting these as exhibits?

1 Then Figure 2 is Exhibit 378.

2 MS. FRANZETTI: And, Albert, we
3 brought a set for you.

4 MR. ETTINGER: How nice you are. I
5 always wanted these maps.

6 MS. FRANZETTI: Don't say I've never
7 given you anything. I don't think we need to
8 make any further reference to it right now.

9 MS. WILLIAMS: Are you ready?

10 HEARING OFFICER TIPSORD: Yes.

11 BY MS. WILLIAMS:

12 Q. Question 20. Now we're moving on to
13 temperature. So if someone has a follow-up on --
14 okay. We'll move on to temperature. On Page 3 of
15 your testimony you state, quote, importantly thermal
16 modification has never been identified by the
17 Illinois EPA as a cause of impairment. First I
18 want -- I ask what do you mean by thermal
19 modification and whether the term is different than
20 thermal pollution?

21 A. Thermal modification was a term used
22 by IEPA in the past in certain of its water quality
23 reports. As I used it here it refers to the
24 modification of normal thermal regimes.

1 Q. And by normal do you mean natural?

2 A. Yes.

3 Q. Do you know the methodology used to
4 determine whether this parameter or any chemical
5 parameter is listed as a cause of impairment for
6 secondary contact in indigenous aquatic life use
7 waters?

8 A. My testimony is not limited to whether
9 303(d) listing purposes temperature was found to be
10 a cause of impairment for secondary contact in
11 indigenous aquatic life use waters. It includes
12 impairment for purposes of preventing a water body
13 from attaining the Clean Water Act Aquatic Use
14 Goals. My point is that I've not previously heard
15 or read any findings or comments by the Illinois EPA
16 that temperature was a significant stressor that was
17 preventing this waterway from achieving a more
18 balanced through diverse fish population. I was also
19 reacting to certain statements in the UAA report for
20 the Lower Des Plaines river that seemed to state or
21 imply that even the secondary contact thermal
22 standards were being exceeded at times in the
23 waterway. Such a statement on Page 2-70 of the UAA
24 says the maximum temperatures in the upper part of

1 the Dresden Island Pool during the summer reached 35
2 to 37 degrees centigrade which is 100 degrees
3 Farenheit during which oxygen saturation
4 concentration is smaller. Although I understand the
5 Illinois EPA did correct this inaccurate statement
6 where it appeared in the temperature section,
7 Chapter 2, nevertheless, it continues to exist in
8 other sections of the report. There is Figure 2.43
9 on Page 2-93 of the report which depicts the range
10 of summer temperatures in the Upper Dresden Island
11 Pool as being between 33 and 38 degrees centigrade;
12 the higher end of this range would be above 100
13 degrees Farenheit, although, again, it's my
14 understanding that the Agency subsequently indicated
15 and agreed this reported high end of the temperature
16 was not supported by existing data. It's my
17 understanding the end-of-pipe discharge temperature
18 data from Midwest Gen's Joliet station as it entered
19 the discharge canal was misinterpreted by the UAA
20 consultant as being data for the main body of the
21 river.

22 Q. Have you reviewed the exhibits that
23 correct some of those statements on the record?

24 MS. FRANZETTI: Counsel, what are you

1 referring to? That's too vague.

2 MS. WILLIAMS: I mean he's going back
3 to list pages in the report that he says are
4 inaccurate which we have multiple times
5 addressed in this proceeding, including
6 submittal of changes to those statements that
7 he's rereading into the record. So I want to
8 know if he's read them.

9 MS. FRANZETTI: Counsel, he
10 acknowledged them in his answer. He's
11 acknowledged that the Agency subsequently,
12 although the report itself has never been
13 changed, has acknowledged that the UAA
14 authors were wrong in the way that they
15 described the ambient temperatures in the
16 Upper Dresden Island Pool. But if you want
17 to ask him to give you what exhibit numbers
18 the Agency did that through, and I think also
19 it was in testimony. I don't think he's
20 going to be able to do that for you.

21 MS. WILLIAMS: I didn't ask him that.
22 I asked him if he reviewed it. I didn't ask
23 him the number.

24 HEARING OFFICER TIPSORD: I'm sorry.

1 I don't even understand when you say reviewed
2 it. Reviewed --

3 MS. WILLIAMS: I'm happy to move on.

4 HEARING OFFICER TIPSORD: Thank you.

5 BY MS. WILLIAMS:

6 Q. There was a piece of your answer I
7 wanted to go back to that I think is much more
8 critical. You said you don't know of anywhere that
9 the Agency has indicated that thermal modifications
10 are a stressor. I may be misparaphrasing here --
11 Let's go back to that statement. Can you repeat
12 what you indicated --

13 A. That's what I said.

14 Q. That the Agency --

15 A. I could not find anywhere in any of
16 the 305 or 303 reports.

17 Q. Okay. Okay. That's what you -- okay.
18 I understand that answer. I'm more comfortable
19 with that answer. You're not saying anywhere in the
20 record of this proceeding that we haven't indicated
21 that?

22 A. No, no.

23 MS. FRANZETTI: Counsel, once again,
24 your question was directed to listing as a

1 cause of impairment. So that's what he was
2 responding to.

3 MS. WILLIAMS: But it wasn't. Then he
4 went to talk about the UAA report so I got
5 confused. Thank you.

6 BY MS. WILLIAMS:

7 Q. Question C asked: Do you know if any
8 of the secondary contact and indigenous aquatic life
9 waters in Illinois are listed as impaired for their
10 designated use?

11 A. Certain -- certainly the secondary
12 contact waters are listed as impaired. Using the
13 2008 assessment info in Appendix B2 in the 2008
14 Illinois EPA report, integrated report, the
15 following Ship Canal segments were listed as being
16 impaired, or, as it said, not supporting indigenous
17 aquatic life. Illinois G102 PCBs iron, oil, and
18 grease, phosphorus DO; Illinois G103 causes were
19 mercury, PCBs, ammonia, DO, phosphorus; and G106
20 PCBs, DO, and phosphorus.

21 MS. FRANZETTI: And just, again, to
22 provide a cross-reference, that information
23 comes from Exhibit 374. It's included in the
24 excerpted pages that make up Exhibit 374.

1 DR. BURTON: Similarly, from the Upper
2 Dresden Pool there were two segments listed:
3 G11 and G23, both of which are in Brandon
4 Pool downstream of the confluence of the
5 Des Plaines Ship Canal. G11 was not
6 supporting aquatic life, G23 was supporting
7 indigenous aquatic life. The causes of
8 impairment were numerous and included
9 chloride, DDT, hexachlorobenzene, iron,
10 nickel, other flow regime alterations, DO,
11 pH, phosphorus, aquatic algae, mercury, PCBs.
12 That's for G11. For G23 it was mercury and
13 PCBs. In addition, U.S. EPA, as I mentioned,
14 challenged the D listing of some of the other
15 causes.

16 BY MS. WILLIAMS:

17 Q. In order for -- This is D: In order
18 for temperature to be listed as a cause of imparity
19 in the Upper Dresden Island Pool, wouldn't the
20 Illinois EPA need to have data demonstrating
21 violations of the second contact and indigenous
22 aquatic life use standard of 100 degrees Farenheit?

23 MS. FRANZETTI: Counsel, I'm just
24 going to object to the question because I

1 don't believe that's an accurate statement of
2 what the thermal water quality standard is
3 for secondary contact indigenous aquatic
4 life. But Dr. Burton is aware of that, and
5 he'll clarify in his answer.

6 DR. BURTON: I believe it would need
7 data showing that one or more aspects of
8 secondary contact thermal standard are being
9 exceeded and that would include if the 100
10 degree maximum limitation is being exceeded
11 or that the temperature shall not exceed 93
12 degrees for more than 5 percent of the time
13 at the allowable edge of the mixing zone.

14 BY MS. WILLIAMS:

15 Q. Do you know of any data that shows
16 that standard to be violated?

17 A. I'm aware that there are annual UIW
18 surveys that were done back in the '90s by Com Ed
19 and then subsequently by Midwest Gen which include
20 reporting temperature data for the Lower Des
21 Plaines, portion of the UAA proceeding. I'm also
22 aware of the MWRD monitors and reports temperature
23 data for portions of CAWS that are part of this.

24 Q. Excuse me. I'm like him to finish the

1 answer.

2 MS. FRANZETTI: He is finished with
3 his answer. I just want a minute to confer.
4 Want to clarify your answer?

5 DR. BURTON: Yes. I was, as she
6 mentioned, I was talking about data that
7 existed. I'm not aware of data that shows
8 the exceedence.

9 MS. FRANZETTI: Counsel, wasn't that
10 your question?

11 MS. WILLIAMS: It was. You're
12 correct. You're clearing it up.

13 MS. FRANZETTI: I'm trying to clear up
14 the record.

15 MS. WILLIAMS: I appreciate that.

16 DR. BURTON: I'm reading and not
17 listening.

18 BY MS. WILLIAMS:

19 Q. So were you -- I just want -- I mean
20 the only point of these questions is to understand
21 whether you are interpreting the Agency's findings
22 in its reports that the secondary contact thermal
23 standard is not being violated to be the same thing
24 as the Agency finding that thermal modifications are

1 not preventing attainment of Clean Water Act Aquatic
2 Life Use Goals. Do you see those two analyses as
3 being the same thing?

4 MS. FRANZETTI: I'm just going to
5 object to form, but do you understand?

6 DR. BURTON: I don't understand.

7 MS. FRANZETTI: Counsel, are you
8 trying to say that if it's the Agency's
9 position that temperature is a major stressor
10 out there, that that's different from whether
11 or not the Upper Dresden Island Pool is
12 impaired?

13 MS. WILLIAMS: No. I'm saying that
14 it's different from whether the Upper Dresden
15 Island Pool is impaired for an aquatic life
16 use that is less than the Clean Water Act
17 Goal.

18 BY MS. WILLIAMS:

19 Q. So do you understand the current use
20 that's being assessed is not the Clean Water Act
21 aquatic life goal? Would you agree with that,
22 Dr. Burton, in Upper Dresden Island Pool?

23 MS. FRANZETTI: The designated, the
24 current designated use of the Upper Dresden

1 Island Pool. That's what you're referring
2 to?

3 MS. WILLIAMS: Right.

4 MS. FRANZETTI: You have to be careful
5 when you say assessed.

6 DR. BURTON: Yeah. I agree.

7 BY MS. WILLIAMS:

8 Q. And I'm not trying to be tricky. I'm
9 just trying to clarify that finding that that lower
10 designated use is attained, would you agree is
11 different than finding --

12 A. Yes.

13 Q. -- that the Clean Water Act life use
14 could be attained. Okay. Or would -- or that
15 thermal pollution could possibly prevent attainment
16 of the Clean Water Act Aquatic Life Use Goals? That
17 would be a different --

18 DR. BURTON: It's different.

19 MS. WILLIAMS: Different. Thank you.
20 That's all I was trying to say.

21 MR. ETTINGER: May I drop back a
22 second here? We've had a lot of testimony
23 here based on your study of the 303(d) list
24 and the 305(b) list as to what's impaired and

1 not impaired, correct?

2 DR. BURTON: Yes.

3 MR. ETTINGER: And it's your
4 understanding when -- Is it your
5 understanding that when IEPA decides whether
6 something is impaired or not impaired,
7 they're looking at the standards that are
8 currently applicable to the water body on
9 which they're making that judgment.

10 DR. BURTON: Yes. I am now.

11 MR. ETTINGER: You are now. Okay.
12 So, for example, just to use a possibility,
13 you mentioned that there are new U.S. EPA
14 ammonia criteria that have been put on notice
15 or are being suggested. So a water might be
16 impaired under those criteria, but not under
17 the current criteria so that water wouldn't
18 be listed as impaired now even though perhaps
19 when the criteria were adopted it would be
20 listed.

21 DR. BURTON: Right.

22 MR. ETTINGER: Okay. Conversely, if a
23 standard were weaker now on some other -- or
24 also a standard were weaker now on a

1 pollutant parameter, it might not be listed
2 even though as a biological matter some might
3 subsequently be cited with different
4 standards that should have been adopted, it
5 should have been listed.

6 DR. BURTON: What my whole testimony
7 is focussing on is what are the stressors in
8 the system? And by looking at the 303(d) and
9 305(b), I see what the Illinois EPA says are
10 the stressors.

11 MR. ETTINGER: As they've applied
12 current standards?

13 DR. BURTON: I understand. But
14 there's a lots of them. There's a lot of
15 impairments that they have been -- and
16 contaminated sediments, and they don't have
17 sediment quality guidelines. So, you know,
18 that's not going to kick in some things. So
19 they're not looking at everything, but I'm
20 looking at the big picture here and what's
21 causing the problem. And I understand that
22 temperature is not going to be listed, but I
23 couldn't find it listed anywhere for
24 anything.

1 MR. ETTINGER: Do you know if it's
2 listed anywhere in the State of Illinois?

3 DR. BURTON: I didn't find anything in
4 this watershed that said temperature was an
5 issue. And on the master list I don't recall
6 temperature ever being an issue.

7 MR. ETTINGER: Under current
8 standards?

9 DR. BURTON: Yes.

10 MR. ETTINGER: If we changed the
11 standards it might be listed.

12 DR. BURTON: Of course.

13 BY MS. WILLIAMS:

14 Q. Question 21: On Page 11 of your
15 testimony you state: The authors of the Lower Des
16 Plaines River UAA report incorrectly imply and
17 over-generalize that high temperatures are always
18 detrimental. You also state on Page 16 of
19 Attachment 1 that, quote, while temperature can
20 certainly be a stressor, a literature review found
21 that warm temperatures can be both advantageous and
22 detrimental to aquatic biota.

23 A: What high temperature do you
24 believe the authors of the Lower Des Plaines UAA are

1 referring to?

2 MS. FRANZETTI: I'm going to have to
3 just object for the record. They didn't
4 state it. We can't read their minds. So I
5 think it's a bit of a speculative question.

6 MS. WILLIAMS: I agree. Let's move on
7 to B.

8 MS. FRANZETTI: Okay.

9 BY MS. WILLIAMS:

10 Q. Did you find any literature sources
11 that indicated temperatures of 100 degrees Fahrenheit
12 in the receiving stream can be advantageous to the
13 aquatic community. What about above 93 degrees?

14 A. Given that I do not believe that it's
15 accurate to state the data on the Upper Dresden
16 Island Pool shows ambient temperatures typically
17 reach 100, I did not search for any literature
18 sources addressing that temperature. With respect
19 to temperatures above 93, I note that Midwest Gen's
20 long-term field monitoring data of the fish
21 community in the Upper Dresden Pool demonstrates
22 fish species which are the UAA report author's claim
23 cannot survive in the Lower Des Plaines because of
24 the lethal secondary contact thermal standard are,

1 in fact, found in abundance.

2 Q. Did you consider that a literature
3 source, Dr. Burton?

4 A. What I said --

5 Q. I mean the question is asking about
6 literature sources. I'm just wondering if the EA
7 information you're citing you considered a
8 literature source?

9 A. It's in a report.

10 Q. Okay.

11 A. Under the secondary contact standard,
12 temperatures between 93 and 100 are only allowed for
13 relatively short period. In other words,
14 temperatures might be between 93 and 100 for a few
15 days, but not for 18.25 days in a row. Further, we
16 know the fish will avoid uncomfortable temperatures
17 as long as refugia are available. It's unreasonable
18 to conclude that avoidance does work effectively in
19 this system. Because in the period that I'm most
20 familiar with which is the 1990s to present, there
21 have been no reported fish kills and the species
22 referred to in the UAA all maintained reasonable
23 populations.

24 Q. But, Dr. Burton, I don't think you're

1 answering my question. This is not about what
2 temperatures cannot be harmful. The question -- You
3 have stated that high temperatures can also be
4 advantageous. And I want to get at what
5 temperatures you are referring to that can be
6 advantageous.

7 A. Warm temperatures can improve
8 ecosystem productivity --

9 Q. How warm?

10 A. -- have longer and faster --

11 MS. FRANZETTI: Let him answer.

12 DR. BURTON: -- growth periods, and
13 allow for increased growth of some organisms
14 that may be prey or predators.

15 BY MS. WILLIAMS:

16 Q. How warm?

17 A. I do not know. I've not tried to
18 determine what those temperatures are, nor am I
19 advocating warmer temperatures. I'm trying to put
20 temperature stress in the context of the other
21 stressors.

22 Q. Question D. But I'd like to reword
23 Question D a little bit, so why don't you listen
24 carefully. What is the highest temperature in

1 Northern Illinois streams that is known to be
2 advantageous to aquatic life?

3 A. I do not know.

4 Q. Question 22: On Page 16 of
5 Attachment 1 you state, quote: Another concern not
6 discussed in the Lower Des Plaines River UAA report
7 is that there are winter maximum temperatures which
8 are impacted by municipal wastewater effluents and
9 may impede some reproductive processes. You also
10 state on Page 11 of your prefiled testimony that,
11 quote, another concern regarding temperature is that
12 there are winter maximum temperatures which are
13 impacted by municipal wastewater effluents and may
14 impede some fish reproductive processes. Is it your
15 testimony that the winter temperatures in the CAWS
16 and Lower Des Plaines River impede fish reproductive
17 processes?

18 A. No. That's not my testimony. What I
19 meant was that the ambient winter temperatures of
20 these waterways are largely dictated by POTW
21 effluent temperatures rather than typical seasonal
22 change of a natural waterway. The effluent
23 dominated nature of the waterway results in warmer
24 ambient temperatures than you would encounter in

1 natural streams during the winter months. The
2 effects of this on fish reproduction in the UIW are
3 not clear. We do know that PPCPs in the municipal
4 effluent dominated system may be impeding fish
5 reproductive success. We do know that pyrethroid
6 pesticides that now dominate in sediments of urban
7 waterways and are actually more toxic at cooler
8 temperatures and have been found throughout the
9 State of Illinois recently. And they've been shown
10 to be the dominant stressor and sediment affected in
11 benthic macro invertebrates.

12 Q. Those are pesticides, right?

13 A. Yes.

14 Q. So are you saying that we have better
15 data on the impact of emerging contaminants,
16 pesticides, personal care products, than on
17 reproductive process? So do we have better data on
18 those contaminants on fish reproductive processes
19 than we have on what winter temperatures are harmful
20 to fish reproductive processes?

21 A. I don't know. There is not much
22 literature there in relation to winter effects on
23 fish.

24 Q. Okay.

1 MR. ETTINGER: May I ask something
2 else? I'm interested in these pyrethroid
3 pesticides. What are the pyrethroid
4 pesticides that you're talking about?

5 DR. BURTON: Oh, sorry. I've
6 submitted a couple of papers. Pyrethroids
7 have been introduced to replace things like
8 Diazinon that were taken off the market. So
9 now if you go to your home care center, Home
10 Depot, most of the insecticides that you pull
11 off the shelf, the active ingredient is
12 pyrethroids. And they've been found now in
13 Illinois and extensive studies in California
14 to be dominating sediment toxicity. They're
15 toxic at the part-per-trillion level, they
16 last a long time, and invertebrates are very
17 sensitive to it.

18 MR. ETTINGER: Well, what specifically
19 are they used for?

20 DR. BURTON: Killing bugs. They're
21 insecticides. So they're actually used more
22 by home owners than they are farmers.

23 MS. FRANZETTI: Dr. Burton, do you
24 mean people spraying Raid-like products?

1 DR. BURTON: Everything, yeah.

2 MS. FRANZETTI: You mentioned a recent
3 study and that it's been submitted. Can you
4 identify on Exhibit 371 the number of the
5 study you're talking about?

6 DR. BURTON: The one of the state-wide
7 survey was published by Mike Whiting (ph.),
8 No. 26.

9 MS. FRANZETTI: And that's a 2009 --

10 DR. BURTON: That's a typo. That and
11 Mahler, No. 27, should be 2010. It just came
12 out.

13 MS. FRANZETTI: I hate to disagree
14 with my witness, but I want to clarify why
15 the legal assistant who put this together put
16 2009. And that's because on the front page
17 of each of those studies it says first
18 variable on the internet 2009. It is -- It
19 was published in a written journal just this
20 month, January 2010.

21 DR. BURTON: Correct.

22 HEARING OFFICER TIPSORD: Those
23 lawyers.

24 MR. ETTINGER: Does U.S. EPA have a

1 water quality standard for these pesticides?

2 DR. BURTON: No.

3 BY MS. WILLIAMS:

4 Q. Question 23 asks whether you reviewed
5 the temperature criteria options for the Lower Des
6 Plaines River report by Chris Yoder which is
7 Exhibit 15.

8 A. Twenty-three?

9 Q. Yes.

10 A. I'm aware of the existence of the
11 separate Yoder report. But, again, a detail review
12 and evaluation of that was beyond the scope of my
13 testimony.

14 MS. FRANZETTI: I would just note for
15 the record, Mr. Yoder's report, from our
16 understanding, dealt with thermal standards,
17 and that that's in Phase 2 of this
18 proceeding. So we did not have Dr. Burton or
19 ask Dr. Burton to the study the Yoder report.

20 MS. WILLIAMS: Then I think I can skip
21 24 and move on to 25.

22 BY MS. WILLIAMS:

23 Q. Is it your testimony that temperature
24 inputs are not a stressor to aquatic life in the

1 Lower Des Plaines River?

2 A. I don't think temperature inputs are
3 what's preventing the Lower Des Plaines River from
4 attaining aquatic life goals. To the extent that
5 higher ambient temperatures are present in this
6 system as compared to natural, the relative stress
7 that they place on the aquatic community really
8 pales in comparison to the other stressors like lack
9 of habitat, siltation modified flow, sediment
10 toxicity, and other urban run-off effects. Thermal
11 inputs are not a barrier to the recovery of the
12 Lower Des Plaines because these other stressors are.

13 Q. You state -- Question 26, you state on
14 Page 12 of your testimony that, quote, outside the
15 thermal discharge plume, temperature was not
16 observed as a factor of in situ toxicity.

17 A: Was temperature observed as a
18 factor of in situ toxicity inside the thermal
19 discharge?

20 MS. FRANZETTI: And, Counsel, if I
21 may. Can the witness, Dr. Burton, at least
22 please clarify this inside and outside of the
23 thermal plume so it's clear on the record?

24 MS. WILLIAMS: Sure.

1 MS. FRANZETTI: What he's referring
2 to.

3 MS. WILLIAMS: That would be great.

4 DR. BURTON: We actually placed our
5 exposure chambers inside the discharge canal
6 so we were not in the Des Plaines River, per
7 se. We were in the canal that connects to
8 the river. So having said that, yes, with
9 the continuous exposure for days and the
10 surface water, but not the bottom water, we
11 saw effects.

12 BY MS. WILLIAMS:

13 Q. What were the effects that you saw?

14 A. Toxicity.

15 Q. I think that --

16 MR. ETTINGER: Sorry. Could you just
17 explain that a little better. Where did you
18 see this? Is this in some report --

19 DR. BURTON: At the Joliet station
20 there's a long peninsula that discharge goes
21 down like a long channel, canal.

22 MS. FRANZETTI: I think it's been
23 referred to a discharge canal in this
24 proceeding.

1 DR. BURTON: Before it empties into
2 the Des Plaines. We were at the end of that
3 peninsula, at the end of that discharge
4 canal. And we had exposures at the surface
5 and then at the bottom, right above the
6 sediment. But as you know, heat rises, so
7 the upper waters produce the toxicity; the
8 lower waters did not.

9 MR. ETTINGER: And what toxicity did
10 you observe?

11 DR. BURTON: The longer they were
12 exposed, the greater the mortality.

13 MR. ETTINGER: To what?

14 DR. BURTON: To three different
15 organisms, I believe. I don't have it in
16 front of me, but a zooplankton, fish, and an
17 amphipod.

18 MR. ETTINGER: And did you -- Do you
19 have measurements of what the temperatures
20 were when you found that toxicity?

21 DR. BURTON: Yes. They averaged 91.4
22 degrees.

23 MR. ETTINGER: Is this all -- It's
24 all -- Is this study and this data contained

1 in something that's now in the record?

2 DR. BURTON: It's in the reports that
3 were submitted that I wrote.

4 BY MS. WILLIAMS:

5 Q. So are you saying, Dr. Burton --
6 Because I think, and Albert and I may be having the
7 same kind of little bit of surprise because we
8 interpreted discharge plume maybe differently as
9 Miss Franzetti clarified. So are you saying that
10 that study took sediment samples within the
11 discharge canal and then analyzed them for
12 temperature, or are you saying that the -- what
13 sediment samples were being analyzed in these tests?

14 A. That was a different study.

15 Q. Okay. This is just a thermal effect
16 study?

17 MR. ETTINGER: I'm sorry. We -- my
18 associate here was helpful to point out that
19 you've put a lot of reports in this record,
20 and maybe I should find out exactly which one
21 is one of these of the 75 you're referring
22 to.

23 DR. BURTON: I believe it's '95.

24 MR. ETTINGER: Mine only go to 48.

1 MS. FRANZETTI: He was giving you the
2 year of the study. We'll find what number it
3 is. Give me just a second.

4 DR. BURTON: It's in the summary
5 report, No. 6.

6 MS. FRANZETTI: That will at least
7 reference it, Albert. I don't know that
8 it'll give all the details.

9 MR. ETTINGER: It's probably in my
10 basement.

11 MS. FRANZETTI: It is.

12 DR. BURTON: Can I add something?

13 HEARING OFFICER TIPSORD: Yes.

14 DR. BURTON: It may not be clear that
15 these were not samples that were taken back
16 to the lab. These were cages with the
17 organisms in them that were placed in the
18 canal.

19 HEARING OFFICER TIPSORD: Just to
20 clarify, you placed the organisms there.
21 These were not organisms that you observed
22 dying in the plume that floated through?

23 DR. BURTON: We'd place them there,
24 and then every day we would sample them and

1 see who was alive and who was dead.

2 HEARING OFFICER TIPSORD: And are
3 those organisms, do they naturally occur in
4 this stream?

5 DR. BURTON: These were U.S. EPA's
6 indicator organisms that are typically used
7 for toxicity testing. So some of these could
8 occur there, some may not. But it's what EPA
9 uses -- U.S. EPA. The tests with Daphnia
10 magna. There are no Daphnia magna in this
11 system.

12 BY MS. WILLIAMS:

13 Q. Can you explain how that test was
14 designed to evaluate sediment toxicity?

15 A. That one wasn't.

16 Q. So this was just a thermal test?

17 A. Right.

18 Q. From the --

19 A. Just the water column for this
20 particular experiment.

21 Q. Do you have anything, Albert?

22 MR. ETTINGER: Desire for lunch.

23 MS. WILLIAMS: Maybe we should answer

24 Question D.

1 BY MS. WILLIAMS:

2 Q. What was the purpose of this study?

3 A. We were assessing whether and to what
4 extent temperature had an effect on toxicity of
5 surface waters and sediments in the Des Plaines.

6 Q. Okay. How did the study -- I'm trying
7 to understand how the study told you that toxicity
8 of sediments was a factor as opposed to just thermal
9 kills?

10 A. Okay. There were -- For this
11 particular experiment there were cages put on the
12 sediment sitting on the bottom looking at
13 temperature and the effects that we observed. So
14 there was a mesh on the bottom exposed to the
15 sediments. So the organisms actually see the
16 sediment interface. And if there's contaminants
17 there, it can impact it. So we've been doing that
18 for 20 years. What we saw here was that the
19 temperature was staying -- the high temperature was
20 staying in the upper surface waters so it was not
21 having any effect on sediment toxicity there. The
22 other experiments that were reported here in the
23 testimony were sediments collected out of Brandon
24 Road Lock & Dam Pool and exposed in the laboratory

1 to higher sediment -- I mean to higher temperatures.

2 Q. But you found in the first study that
3 we're talking about with the cages --

4 MS. FRANZETTI: Maybe, Counsel, if I
5 can just suggest the first -- the experiment
6 dealing with the cages, because you keep
7 saying study. His study, I think, included
8 multiple -- what would be called -- more I
9 think experiments? Yes. So that might help.

10 BY MS. WILLIAMS:

11 Q. But I thought your testimony said that
12 that study did find temperature to be a factor,
13 correct?

14 A. I think you're confusing the sediment
15 toxicity with another experiment.

16 Q. I'm just trying to find -- I mean I
17 thought I was just trying to ask about. You said
18 outside the thermal discharge plume, temperature was
19 not observed as a factor of in situ toxicity. So
20 inside the discharge plume it was a factor, correct?

21 A. Inside the discharge canal.

22 Q. Which we've said is a canal. I'm
23 sorry. Okay. And am I referring to the correct
24 study that showed that when we're talking about the

1 cages?

2 A. The cages?

3 Q. By experiment.

4 A. Showed temperature toxicity in the
5 canal surface waters.

6 Q. So it's temperature toxicity, not
7 temperature's effect on sediment toxicity?

8 A. No.

9 Q. So I'm misunderstanding your
10 testimony. Okay. Thank you.

11 A. There's no depositional sediment in
12 the canal. It's -- There is such a high flow going
13 through there it just blows it all out.

14 Q. Thank you. I'm ready to move on. Do
15 you have anything else?

16 Twenty-seven: Can you provide
17 examples of a pollutant and species where increased
18 temperatures can make toxicity worse?

19 A. Well, unfortunately it's too
20 simplistic to make this evaluation. Because the
21 interactions are so complex. Generally chemicals
22 such as nutrients, synthetic organics and metals and
23 pathogens tend to associate with solids through
24 their binding affinities. Therefore, these

1 sediments have -- depositional sediments have
2 greater surface area, and you'll get higher
3 concentrations. And the rate of absorption,
4 degradation desorption is going to be tied into
5 temperature. The depth of water is important, as
6 we'll talk about later with the photo-induced
7 toxicity of PAHs.

8 As you know, ammonia changes with
9 toxicity and can become more toxic and warmer
10 temperatures.

11 Q. Would you say in just a very
12 simplistic way that for the lay person like myself,
13 that assuming all else is equal, it's generally true
14 that increasing temperature will typically result in
15 an increase in the toxic effect of a substance on
16 aquatic animals?

17 A. Reference No. 13 that we submitted by
18 John Karen way back there 1978 showed, again, it's
19 too complex to make that generalization; that it
20 varied with the chemical, the species, and the
21 concentration and the temperature. Sometimes
22 greater effects are seen in colder temperatures such
23 as I mentioned with pyrethroids. They're more
24 toxic.

1 MS. FRANZETTI: Could you spell
2 pyrethroids?

3 DR. BURTON: P-Y-R-E-T-H-R-O-I-D-S.

4 BY MS. WILLIAMS:

5 Q. I don't think I have anything else on
6 this temperature section, so I don't know if we want
7 to move on.

8 HEARING OFFICER TIPSORD: It's
9 probably a good time to break for lunch.
10 We'll be back an in hour.

11 (Lunch break taken.)

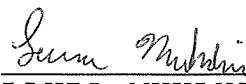
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I, LAURA MUKAHIRN, being a Certified Shorthand Reporter doing business in the City of Chicago, Illinois, County of Cook, certify that I reported in shorthand the proceedings had at the foregoing hearing of the above-entitled cause. And I certify that the foregoing is a true and correct transcript of all my shorthand notes so taken as aforesaid and contains all the proceedings had at the said meeting of the above-entitled cause.



LAURA MUKAHIRN, CSR
CSR NO. 084-003592

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